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STIC Search Report
EIC 2600

STIC Database Tracking Number: 111624

TO: Christopher Magee
Location: CPK2 3A42
Art Unit : 2653
Friday, January 09, 2004

Case Serial Number: 10/068450

From: Vamshi Kalakuntla
Location: EIC 2600
PK2-3C03
Phone: 306-0254

Vamshi.kalakuntla@uspto.gov

Search Notes

Dear Christopher Magee;

Attached please find the results of your search request 10/068450.
I used the search strategy I emailed to you to edit.
I searched the standard Dialog files, IEEE and the internet.

If you would like a re-focus please let me know.
Please feel free to contact me if you have questions or concerns. Thank you and have a great day.

Please take a moment and fill out the attached feedback form. Thank you.

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Search and Information Resources Administration

(27)

22

Access DB# 111624

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: CHRISTOPHER MAGEE (USED TO BE BEACHAM) Examiner #: 78799 Date: 1/7/03
Art Unit: 2653 Phone Number 30 605-4256 Serial Number: 10/068,458
Mail Box and Bldg/Room Location: CPK 2 - 3A42 Results Format Preferred (circle): ~~PAPER~~ DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: INFORMATION RECORDING/REPRODUCTION APPARATUS

Inventors (please provide full names): NOBUYUKI KASAMA; YOKO SHINOHARA; HIDETAKA MAEDA; YASUYUKI MITSUOKA; MANABU OUMI; KENJI KATO; TAKASHI NIWA

Earliest Priority Filing Date: 2/7/2002

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

- ATTACHED IS COPY OF ABSTRACT & CLAIMS
- DRAWINGS
- CLASS 369/112.27 ; 385/30; 385/36; 369/112.01 369/112.09 ; 369/112.02-.03

- KEYWORDS: NEAR FIELD LIGHT; OPTICAL WAVEGUIDE; CORE; CLAD; MINUTE APERTURE

STAFF USE ONLY

Searcher: Vamshi Kalakuntla
Searcher Phone #: 703 306 0254
Searcher Location: CPK2 3C03
Date Searcher Picked Up: 01/08/04
Date Completed: 01/09/04
Searcher Prep & Review Time: 220
Clerical Prep Time: _____
Online Time: 260

Type of Search

NA Sequence (#) _____
AA Sequence (#) _____
Structure (#) _____
Bibliographic ✓
Litigation _____
Fulltext ✓
Patent Family _____
Other _____

Vendors and cost where applicable

STN _____
Dialog ✓
Questel/Orbit _____
Dr.Link _____
Lexis/Nexis _____
Sequence Systems ✗
WWW/Internet ✓
Other (specify) _____

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File 344:Chinese Patents Abs Aug 1985-2003/Nov
         (c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Sep(Updated 040105)
         (c) 2004 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2003/Dec W02
         (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20031225,UT=20031218
         (c) 2003 WIPO/Univentio
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200402
         (c) 2004  Thomson Derwent
? ds

Set      Items   Description
S1         421   AU=(KASAMA N? OR KASAMA, N?)
S2        1323   AU=(SHINOHARA, Y? OR SHINOHARA Y?)
S3        5271   AU=(MAEDA H? OR MAEDA, H?)
S4         398   AU=(MITSUOKA, Y? OR MITSUOKA Y?)
S5          84   AU=(OUMI M? OR OUMI, M?)
S6       17916   AU=(KATO, K? OR KATO K?)
S7        3092   AU=(NIWA T? OR NIWA, T?)
S8         322   (S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7) AND IC=(G02B-006/-
                 26 OR G02B-006/42 OR G11B-007/00 OR G11B-007/135)
S9         119   (S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7) AND NEAR()FIELD()-
                 (LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR SCAN? ? OR SCANN-
                 ING)
S10         88   S8 AND S9
S11     299391   OPTIC?(N)(FIBER? ? OR FIBRE? ? OR WAVEGUID?) OR (CORE AND -
                 CLAD)
S12         16   S10(15N)S11
S13         16   IDPAT S12 (sorted in duplicate/non-duplicate order)
S14         15   IDPAT S12 (primary/non-duplicate records only)
S15          8   S14 AND (CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR -
                 CONCENTER? OR CONCENTRING OR CONCENTRE?)(10N)(LIGHT OR OPTIC?)
S16         26   (S9 OR S8)(10N)S11
S17         32   (S9 OR S8)(S)S11
S18          8   S17(10N)(CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR -
                 CONCENTER? OR CONCENTRING OR CONCENTRE?)(10N)(LIGHT OR OPTIC?)
S19         17   S17(S)(MICROLENS? ? OR LENS? ?)
S20         12   (S18 OR S19) NOT S15
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15/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01474840
Near-field light-generating element, near-field optical recording device, and near-field optical microscope
Lichterzeugendes Nahfeld-Element, nahfeld-optische Aufzeichnungsvorrichtung und optisches Nahfeldmikroskop
Element generateur de lumiere en champ proche, appareil d'enregistrement optique de champ proche et microscope de balayage optique de champ proche
PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP), (Applicant designated States: all)
INVENTOR:
Oumi, Manabu, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kasama, Nobuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kato, Kenji, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Shinohara, Yoko, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Niwa, Takashi, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Mitsuoka, Yasuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50505), Miller Sturt Kenyon, 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1251383 A2 021023 (Basic)
APPLICATION (CC, No, Date): EP 2002252636 020415;
PRIORITY (CC, No, Date): JP 2001118543 010417; JP 200292276 020318
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06; G11B-007/00
ABSTRACT WORD COUNT: 84
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200243	576
SPEC A	(English)	200243	8620
Total word count - document A			9196
Total word count - document B			0
Total word count - documents A + B			9196

...SPECIFICATION vacuum-evaporation and then the front end of the tip is cut by the FIB (**focused** ion beam) method. As a result, a tip having an **optical** aperture at its front end is fabricated. The contour shape of the aperture is determined...

...head subsequently. Therefore, a circular aperture is normally formed.

An optical probe used in a **near - field optical** microscope is fabricated by heating, drawing, and cutting an **optical fiber** , depositing a light-shielding film of Al, and then cutting the front end to form...

...laser light source is directed to the aforementioned optical head or probe to thereby produce **near - field light** . The incident light is guided from the laser by an **optical fiber** and propagated through air to the microscopic aperture. The light from the laser is linearly...to the recording medium 105. To guide light fluxes from a laser 101 to the **near - field optical** head 104, an **optical waveguide** 103 consisting of a **core** and a **clad** fixed to a lens 102 and the suspension arm 107 is used. A polarization-maintaining...by vacuum evaporation. Finally, in step S304, the front end is cut by the FIB (**focused** ion beam) method and an **optically** small aperture 206 is fabricated. The minute aperture 206 can be formed without using FIB...of optical information, a lens 602 placed in front of the light source 601, an **optical fiber** 603 for propagating light collected by the lens 602 to the **near - field optical** probe 1000, a prism 611 placed below a specimen 610 and reflecting propagating light produced...

...mode in which light reflected from the specimen 610 is detected. Additionally, the near-field **optical** probe 1000 can be used in a dynamic **focus** mode in which the lever 702 is vibrated by applying vibration to the near-field...a light-shielding film 704 is deposited on the front surface. Undesired portions of the **light** -shielding film 704 are removed by a **focused** ion beam or pressing the tip 701 against the specimen during observation. As shown in...

15/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01445013
Information recording/reproduction apparatus
Informationsaufzeichnungs- / -wiedergabegerat
Appareil d'enregistrement / de reproduction d'informations
PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP), (Applicant designated States: all)
INVENTOR:
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Shinohara, Yoko, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku , Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku , Chiba-shi, Chiba, (JP)
Mitsuoka, Yasuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Oumi, Manabu, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kato, Kenji, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Niwa, Takashi, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
LEGAL REPRESENTATIVE:
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PATENT (CC, No, Kind, Date): EP 1233410 A2 020821 (Basic)

APPLICATION (CC, No, Date): EP 2002251022 020214;
PRIORITY (CC, No, Date): JP 200140589 010216
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135
ABSTRACT WORD COUNT: 109
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200234	324
SPEC A	(English)	200234	8503
Total word count - document A			8827
Total word count - document B			0
Total word count - documents A + B			8827

...ABSTRACT A2
An information recording/reproduction apparatus including a **near field optical** head (104) having a minute aperture (206) formed thereon, a substantially rod-like **optical waveguide** (103) having a core (201) and a clad (202), a reflection surface (203) formed at one of end faces of the **optical waveguide** , for irradiating light to the **near field optical** head, a light reception portion and a recording medium, and utilizing near field light, a lens function (205) is formed on a surface of the **near field optical** head different from the surface of the minute aperture, and a **core** end face is formed at an intermediate part spaced apart from the reflection surface.

...SPECIFICATION as to respond to swell of the disk.
A method of supplying light to the **near field optical** head having such a construction comprises the steps of connecting an **optical fiber** or an **optical waveguide** to the **near field optical** head, and irradiating a luminous flux from a laser as a light source to the...

...apparatus so as to condense the luminous flux irradiated from the end face of the **optical waveguide** to a portion in the proximity of the minute aperture, to increase the intensity of **near field light** occurring in the proximity of the minute aperture and to improve light utilization efficiency. When...

...having a high NA is used, a condensation spot size can be made small and **optical** energy can be **concentrated** on a finer region. When the minute aperture is disposed at this condensation point, the...tip is accomplished.
The information recording/reproduction apparatus produced by discretely preparing and assembling the **optical waveguide** , the mirror, the lens, and the like, can generate sufficiently strong **near field light** by use of the minute aperture, and can accomplish recording and reproduction of ultra-high...

...includes a light source, a suspension arm, a flexure fixed to the suspension arm, a **near field optical** head having a minute aperture formed therein, a substantially rod-like **optical waveguide** having a **core** and a clad, a reflection surface formed on the side of one of the end faces of the **optical waveguide** , for irradiating light to the **near field optical** head, a light reception portion, and a recording medium, the apparatus utilizing near field light; wherein a lens function

for a head is formed on the surface of the **near field optical** head different from the surface of the minute aperture, and a **core** end face is formed at an intermediate part of the optical waveguide.

It becomes therefore...apparatus has the mechanism in which the distal end portion of the core of the **optical** waveguide has the lens function of a convex or **concave** shape. Since this lens function is combined with the lens formed in the near field...

...fourth information recording/reproduction apparatus has the construction in which the reflection surface of the **optical** waveguide has the **concave** shape that reflects the luminous flux and much more enlarges its expansion angle, and can...the recording medium 105.

To guide a luminous flux from a laser 101 to the **near field optical** head 104, an **optical waveguide** 103 that comprises a lens 102, and a **core** and a clad fixed to the suspension arm 107 is employed. Intensity modulation may be...

...minute aperture 206 is formed in the shading film on the bottom surface of the **near field optical** head 104. The micro-lens 205 condenses the luminous flux from the **optical waveguide** 103 to the minute aperture 206. The waveguide 103 comprising the **core** 201 and the **clad** 202 is fixed to the upper part of this **near field optical** head 104.

This embodiment uses the glass substrate that permits transmission of light at the...

...view taken along a line AA' in Fig. 3A.

The optical waveguide 103 comprises the **core** 201 and the **clad** 202, and the reflection surface 203 for irradiating light to the **near field optical** head 104 is formed on one of the end faces of the **optical waveguide** 103. Here, a reflection film is formed on the reflection surface 203, whenever necessary.

The micro-lens 205 formed on the **near field optical** head 104. Since the **core** 201 terminates at the intermediate part of the **optical waveguide** 103, the distance from the core end face to the micro-lens 205 can be...

...The luminous flux outgoing from the laser 101 is allowed to be incident into the **optical waveguide** 103 by the lens 102 and is guided to the **near field optical** head 104.

The **core** 201 of the **optical waveguide** 103 terminates at the intermediate part of the optical waveguide 103, and the core end...

...203 as the luminous flux having a certain expansion angle and is irradiated to the **near field optical** head.

As explained already, the **core** 201 terminates at the intermediate part of the **optical waveguide** 103 and the core end face is formed as shown in Fig. 3. Therefore, the...condense the luminous flux having a high energy density to the minute aperture of the **near field optical** head by combining together the **optical waveguide** comprising the **core** and the **clad** , the reflection surface spaced apart from the **core** end face and the micro-lens formed in the **near field optical** head. Further, this apparatus can increase the intensity of near field light generated in the...and the diameter of the luminous flux incident into the micro-lens formed in the **near field optical** head becomes further greater.

Fig. 7 shows the shape of another **optical waveguide** (**core** portion) in the information recording/reproduction apparatus according to Embodiment 3.

In this embodiment, the...

...7, the diameter of the luminous flux incident into the micro-lens formed in the **near field optical** head becomes further greater than when the **core** end face is planar. Then, the NA of the luminous flux incident from the micro...

...to this embodiment employs the construction in which the core distal end portion of the **optical** waveguide has the convex or **concave** lens function. Therefore, in addition to the effect of the information recording/reproduction apparatus of...

...Embodiment 1 shown in Fig. 3 with the exception that the reflection surface of the **optical** waveguide is a **concave** reflection surface 801 as a surface that enlarges the expansion angle of the luminous flux outgoing from the core end face by reflection.

The **concave** reflection surface 801 as the reflection surface of the **optical** waveguide reflects the luminous flux outgoing from the end face of the core 201 and...

...condense the luminous flux having a high energy density at the minute aperture of the **near field optical** head by forming the reflection surface of the **optical waveguide** into the shape that expands the expansion angle of the luminous flux outgoing from the **core** end surface, and can further strengthen the intensity of **near field light** generated in the proximity of the minute ...apparatus has the mechanism in which the distal end portion of the core of the **optical** waveguide has the lens function of the convex or **concave** shape. Since this lens function is combined with the lens formed in the near field...

...fourth information recording/reproduction apparatus has the construction in which the reflection surface of the **optical** waveguide has the **concave** shape that reflects the luminous flux and much more enlarges its expansion angle, and can...

...CLAIMS comprising:

a light source;

a suspension arm;

a flexure fixed to said suspension arm;

a **near field optical** head having a minute aperture formed therein;

a substantially rod-like **optical waveguide** having a **core** and a clad;

a reflection surface formed at the side of one of the end faces of said **optical waveguide** , for irradiating light to said **near field optical** head;

a light reception portion; and

a recording medium; wherein a lens function for a head is formed on the surface of said **near field optical** head different from the surface of said minute aperture, and a **core** end face is formed at an intermediate part spaced apart from said reflection surface.

2...

15/3,K/3 (Item 3 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01344148

Information recording and reproducing apparatus

Informationsaufzeichnungs- und -wiedergabevorrichtung

Appareil d'enregistrement et de reproduction d'information

PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP), (Applicant designated States: all)
INVENTOR:
Kasama, Nobuyuki, c/o Seiko Instruments, R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Oumi, Manabu, c/o Seiko Instruments, R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Mitsuoka, Yasuyuki, c/o Seiko Instruments, R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments, R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kato, Kenji, c/o Seiko Instruments, R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Niwa, Takashi, c/o Seiko Instruments, R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1148477 A2 011024 (Basic)
EP 1148477 A3 021211
APPLICATION (CC, No, Date): EP 2001303351 010410;
PRIORITY (CC, No, Date): JP 2000116580 000418
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-007/22
ABSTRACT WORD COUNT: 209
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200143	409
SPEC A	(English)	200143	9508
Total word count - document A			9917
Total word count - document B			0
Total word count - documents A + B			9917

...SPECIFICATION a method of supplying light to an opening, there is provided means for connecting an **optical fiber** or an **optical waveguide** to the **near - field light** head from above or a horizontal direction or irradiating light flux from a laser provided above the **near - field light** head directly to the **near - field light** head.

Further, by using an **optical fiber** probe or a cantilever type optical probe which is represented by a **near - field optical** microscope and an opening portion of which is sharpened by fabricating an **optical fiber** , while maintaining a position relative to media by an interactive action of tunnel current or...of the substrate or a lattice defect of the substrate. Hence, there is devised a **near - field light** head fabricated with a very small opening and an **optical waveguide** for guiding light to the very small opening only at one face of the substrate...

...shape formation can be carried out.

However, according to the above-described structure of the **near - field light** head, the very small opening and the **optical waveguide** for guiding light to the very small opening are fabricated on the same side of...

...tens nanometers, there poses a problem that there is not a space for

...CLAIMS opening;
a light guiding structure for guiding light flux from a light source to the **near - field light** head; and
a light receiving portion;
wherein the very small opening and an **optical waveguide** for guiding light to the very small opening are disposed on a same side of...

...recording and reproducing apparatus according to any one of claims 1 through 5, wherein the **optical** propagating portion comprises an **optical** waveguide and a lens for **focusing** the **light** flux from the **light** source to an end face of the optical waveguide.
7. An information recording and reproducing...

15/3,K/4 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01270944
NEAR FIELD OPTICAL HEAD AND METHOD FOR MANUFACTURING THE SAME
OPTISCHER NAHFELDKOPF UND VERFAHREN ZU DESSEN HERSTELLUNG
TETE OPTIQUE A CHAMP PROCHE ET PROCEDE DE FABRICATION DE CELLE-CI
PATENT ASSIGNEE:
Seiko Instruments Inc., (839497), 8 Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP), (Applicant designated States: all)
INVENTOR:
SHINOHARA, Yoko, Seiko Instr. R & D. Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
NIWA, Takashi, Seiko Instruments R & d Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
ICHIHARA, Susumu, Seiko Instr. R & d Center Inc., 88, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
MITSUOKA, Yasuyuki, Seiko Instr. R & D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba261 -8507, (JP)
OUMI, Manabu, Seiko Instr. R & D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
KASAMA, Nobuyuki, Seiko Instr. R & D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
KATO, Kenji, Seiko Instr. R & D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1122722 A1 010808 (Basic)
WO 200115151 010301
APPLICATION (CC, No, Date): EP 2000953551 000821; WO 2000JP5605 000821
PRIORITY (CC, No, Date): JP 99238062 990825; JP 99336062 991126
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-021/21; G01N-013/14; G12B-021/06; G02B-006/26
ABSTRACT WORD COUNT: 175
NOTE:
Figure number on first page: 001A001B

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:
Available Text Language Update Word Count

CLAIMS A	(English)	200132	997
SPEC A	(English)	200132	12254
Total word count - document A			13251
Total word count - document B			0
Total word count - documents A + B			13251

...SPECIFICATION is launched into the aperture by means of a light waveguide path such as an **optical fiber** , the intensity of the **near - field light** emitted from the aperture becomes small resulting in problems that the recording and reproducing rate a **concave** shape to provide a near-field **optical** head that **concentrates light** emitted from the **light** propagating medium. In addition, in the seventh near-field optical head related to the present invention, the head has a lens function to **concentrate** the **light** on the tip of the **light** propagating medium.

Therefore, according to the sixth and seventh near-field optical head, it is...

...that the spot diameter of the light emitted from the light emitting edge of the **optical fiber** in the minute structure can be reduced. Therefore, the intensity of the **near - field light** generated by the minute structure is increased.

Further, the fourteenth near-field optical head related...

...film waveguide.

Consequently, with the use of a thin filmwaveguide thinner and lighter than an **optical fiber** as the light propagating medium, the mass of the **near - field optical** head is reduced. Therefore, it becomes easy to improve the positioning accuracy or the positioning...tip of the optical fiber.

Therefore, it is easy to arrange the tip of the **optical fiber** close to the mirror so as to provide a **near - field optical** head generating a **near - field light** of great intensity.

Further, the sixth method of manufacturing the near-field optical head related...

...method characterized in that the method includes a machining process of the tip of the **optical** fiber in a lens shape for **concentrating** the emitted **light** from the **optical** fiber onto the minute structure.

Therefore, the spot diameter of the emitted light from the **optical fiber** on the minute structure is reduced so that a **near - field optical** head generating **near - field light** of great intensity from the minute structure can be provided.

In addition, the fifteenth near...near-field optical head 1000 taken along the A-A' line in Fig. la. The **near - field optical** head 1000 comprises a slider part 1001, a mirror part 1002 and an **optical fiber** 1803, the tip of which is partly ground in parallel with the optical axis. Fig...

...minute structure. Reflection coating 1004 is formed on the surface of the hole 1005 to **concentrate** the **light** incident in the hole 1005 to the minute aperture 1006 effectively. Additionally, the slider part...

...width W1, W2 and the dimensions of the protrusion 1008 are defined such that the **near - field light** emitted from the minute aperture 1006 is maximized. The **optical** fiber 1803 is so constructed that its tip is ground in parallel with the optical axis...such as aluminum or gold, or a dielectric multilayer.

As described above, according to the **near - field optical** head 1000 related to the first embodiment, as the tip of the **optical fiber** 1803 is ground and so the tip of the optical fiber 1803 can be arranged...

Then, near-field light is irradiated onto the record pit from the minute aperture, while **concentrating** the propagating **light** transmitted through the recording medium 504 to the photo detector 507 of the condenser lens...the servo circuit 508 drives the servo motor 509. On the other hand, the propagating **light** transmitted through the recording medium 103 is **concentrated** on the photo detector as a signal including, for example, a difference of the transmission...

...lies in the geometry of the mirror 2002. The mirror 2002 is consisted of a **concave** mirror. The **light** emitted from the **optical** fiber 2803 by the mirror 2002 is changed in its propagating direction toward the minute ...

...optical fiber 3803 of the present invention is processed in a spherical shape.

Accordingly, the **light** emitted from the tip of the **optical fiber** propagates while **concentrating** itself toward the minute aperture 3006. Therefore, as for the **near - field optical** head 3000, the near-field light generated from the minute aperture 3006 has a greater...

...be deformed by the stress generated during period of bonding or joining process of the **optical fiber** 1803 to the slider part 1001. However, by adopting the structure of the **near - field optical** head 4000 according to the present embodiment, even though the slider part 4001 may be...

...the slider part 4001 thin, the spatial propagating distance of the light generated from the **optical fiber** is shortened so that the **near - field optical** head 4000 of the present embodiment has a greater intensity than the near-field optical...near-field optical head 9000 related to the ninth embodiment of the present invention. The **near - field optical** head 9000 consists of a slider part 9001 and an **optical fiber** 9803 equipped with mirror and a mirror 9090. The slider part 9001 is approximately the...

...1003 shown in the first embodiment. The different point is that the tip of the **optical fiber** is ground and the mirror 9090 is formed on the ground surface. According to the **near - field optical** head 9000 of the above structure, not only because of the effects described in the...

...of the present embodiment has following advantages in comparison with the construction having a ground **optical fiber** such as the **near - field optical** head 1000 of the aforementioned first embodiment. In any of the near-field optical head...be launched into the minute aperture 11006.

In addition, for the light incident in the **near - field optical** head 11000 of the embodiment related to the present invention, a light waveguide or an **optical fiber** 700 having a maldistributed core is effective. This light waveguide or the optical fiber 700...to the present invention, in addition to the effects of the first to the twelfth **near - field optical** head, the spot diameter of the light emitted from the light emitting edge of the **optical fiber** in the minute structure can be reduced because the light emitting edge of the **optical fiber** can be arranged closer to the mirror. Therefore, the intensity of the **near - field light** generated from the minute structure can be increased.

Further, according to the fourteenth near-field...

...CLAIMS head of any of claims 1 to 5, wherein the mirror is configured in a **concave** shape which condenses the **light** being emitted from the **light** propagating medium.

7. A near-field optical head of any of claims 1 to 6...

...fixed on the substrate and its light emitting edge fixed on the slider.
13. A **near - field optical** head of any of claims 1 to 12, wherein the light propagating medium is an **optical fiber** machined in a narrow shape by means of grinding the tip thereof in parallel with...

...reflection coating and a forming process of a configuration thereof.
16. A method for manufacturing **near - field optical** head of claim 15, wherein the method includes a fixing process of the **optical fiber** on the slider or the substrate on which the mirror is formed.
17. A method...

...of the tip of the optical fiber in parallel with the optical axis of the **optical fiber** to sharpen the tip of the **optical fiber** .
20. A method for manufacturing **near - field optical** head of claim 16 or 17, wherein the method includes a shaping process of the...
...of the optical fiber in a lens shape to condense the emitted light from the **optical fiber** onto the minute structure.
22. A **near - field optical** head comprising:
a light propagating medium;
a mirror for reflecting the light emitted from the...

15/3,K/5 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01260291
OPTICAL HEAD
OPTISCHER KOPF
TETE OPTIQUE
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 1120778 A1 010801 (Basic)
WO 200108142 010201
APPLICATION (CC, No, Date): EP 2000946388 000718; WO 2000JP4824 000718
PRIORITY (CC, No, Date): JP 99210971 990726; JP 2000183285 000619
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-021/21;

G01N-013/14; G12B-021/06
ABSTRACT WORD COUNT: 75
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200131	301
SPEC A	(English)	200131	4430
Total word count - document A			4731
Total word count - document B			0
Total word count - documents A + B			4731

...SPECIFICATION invention can similarly be embodied also by a collection mode for generating the near-field **light** at a surface of the record medium and **focusing light** scattered by the very small aperture. Fig. 2 shows a flexure structure for a near...

...rotating at high speed.
Fig. 3 shows an enlarged view of the flexure for the **near - field light** head according to Embodiment 1 of the invention. An **optical waveguide** 12 is adhered to a surface of a supporter for connecting the suspension arm and...

15/3,K/6 (Item 6 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01109076
NEAR-FIELD OPTICAL HEAD
OPTISCHE NAHFELDKOPF
TETE OPTIQUE EN CHAMP PROCHE
PATENT ASSIGNEE:
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CHIBA, Norio Seiko Instruments Inc., 8, Nakase 1-chome Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
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NIWA, Takashi Seiko Instruments Inc., 8, Nakase 1-chome Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
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LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 996122 A1 000426 (Basic)
WO 9959149 991118
APPLICATION (CC, No, Date): EP 99918343 990507; WO 99JP2393 990507
PRIORITY (CC, No, Date): JP 98127569 980511; JP 9984291 990326
DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135
ABSTRACT WORD COUNT: 134
NOTE:
Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200017	394
SPEC A	(English)	200017	5441
Total word count - document A			5835
Total word count - document B			0
Total word count - documents A + B			5835

...SPECIFICATION on-silicon-substrate chip formed through anisotropic etching, or otherwise a sharpened tip of an **optical fiber** or a microscopic protrusion on that chip.

Meanwhile, there is a proposal of a **near - field optical** memory as disclosed, for example, in (E. Betzig et al., Science 257, 189 (1992)) applied...for transmitting through the laser light, an optical head 1 having a microscopic aperture, an **optical** head drive actuator 30, a lens 29 for **focusing** a scattering **light** caused due to interaction between a near-field light 7 and a recording medium 33...

...by the wavelength plates 22, 23, and introduced to the optical head 1 through the **optical waveguide** 24.

As will be stated later in Fig. 1, a **near - field light** 7 caused at a bottom surface of the optical head interacts with the recording medium ...

...to the recording medium, it is easy to make a structure for detecting the transmission **light** through the recording medium. The scattering **light** is **focused** by the **focusing** lens 29 and then converted into an electric signal by the light detecting element 25...

15/3,K/7 (Item 7 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01095778
RECORDING APPARATUS .
AUFZEICHNUNGSGERAT
APPAREIL D'ENREGISTREMENT
PATENT ASSIGNEE:
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Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 984438 A1 000308 (Basic)
WO 9949459 990930
APPLICATION (CC, No, Date): EP 99942599 990312; WO 99JP1212 990312
PRIORITY (CC, No, Date): JP 9872786 980320; JP 98291142 981013; JP 98302266 981023; JP 9916202 990125
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G11B-007/09; G11B-007/135; G01N-037/00
ABSTRACT WORD COUNT: 135
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200010	2057
SPEC A	(English)	200010	16879
Total word count - document A			18936
Total word count - document B			0
Total word count - documents A + B			18936

...SPECIFICATION information recording density on the recording medium is limited to the spot size obtainable by **focusing** laser **light** . Accordingly, in the conventional **optical** information recording apparatus adopting a magneto-optical recording scheme and phase change recording scheme, it has been impossible to reduce the spot size obtained by **focusing** laser **light** to smaller than a laser **light** diffraction limit, i.e. a half wavelength of laser light.

On the other hand, there...the near-field light is scattered by the microscopic aperture 12. The scattered light (propagation **light**) is introduced through the microscopic aperture 12 to a **focusing optical** system 15 placed above the microscopic aperture 12. Thus, detection of near-field light is achieved in a collection mode as stated before. The propagation **light** introduced to the **focusing optical** system 15 is introduced through a mirror 16 to a light detecting mechanism 17 and converted into an electric signal to be processed into a reproduced signal. Here, the **focusing optical** system 15 is, for example, a lens **optical** system, **optical** fiber optical system or light guide or the like. Also, the light detecting mechanism 17...scattered by a fine structure on the surface of the recording medium 10. The scattered **light** (propagation **light**) is introduced to the **focusing** optical system 15 arranged on the back side of the recording medium 10. Thus, detection of the near-field light is achieved in the afore-said illumination mode. The propagation **light** introduced into the **focusing optical** system 15 is introduced to the **light** detecting mechanism 17 through the mirror 16 arranged on the back side of the recording...the near-field light is scattered by the microscopic aperture 12. The scattered light (propagation **light**) is introduced through the microscopic aperture 12 to a **focusing optical** system 15 placed above the microscopic aperture 12. Thus, detection of near-field light is achieved in the collection mode. The propagation **light** introduced to the **focusing optical** system 15 contains two different wavelength components ((lambda)1 and (lambda)2) similarly to the...

...scattered by a fine structure in the surface of the recording medium 10. The scattered **light** (propagation **light**) is introduced and **focused** to the **focusing optical** system 15 arranged on the back side of the

due to scattering to the **focusing optical** system 105 is introduced through a mirror 107 to a light detecting mechanism 110 and...

...propagation light created by the microscopic aperture 103 and introduced due to scattering to the **focusing optical** system 106 is introduced through a mirror 108 to a light detecting mechanism 109 and...in the recording apparatus explained in Fig. 20 a system formed by one mirror, the **focusing optical** system and the microscopic aperture is utilized to enable information recording onto the recording medium...

...with the same reference characters.
In Fig. 21(a), a dichroic mirror 117 and a **light** illumination/ **focusing optical** system 115, when conducting information reproduction, respectively function as the mirror 107 and the **focusing optical** system 115 shown in Fig. 20. A laser **light** source 111 is a light illuminating means for recording information. When reproducing information, laser light...

...and 110.
The laser light incident on the dichroic mirror 117 is introduced to the **light** illuminating/ **focusing optical** system 115. On this occasion, the **light** illuminating/ **focusing optical** system 115 serves as a **focusing optical** system. The laser **light focused** by the **light** illuminating/ **focusing optical** system 115 is introduced to the microscopic aperture 102 to create near-field light. This...

...scattered by a fine structure on the surface of the recording medium 10. The scattered **light** (propagation **light**) is introduced and **focused** to the **focusing optical** systems 105 and 106 arranged on the back side of the recording medium 10. Thus...

...The propagation light created by the microscopic aperture 102 and introduced through scattering into the **focusing optical** system 105 is introduced to the **light** detecting mechanism 110 through the mirror 107 and converted as a reproduced signal into an...

...the propagation light created by the microscopic aperture 103 and introduced through scattering into the **focusingoptical** system 106 is introduced to the **light** detecting ...of propagation light scattered by the microscopic apertures 102, 103 is made through the corresponding **focusing optical** systems 105, 106 to the microscopic apertures. Alternatively, in place of the **focusing optical** systems 105, 106, one **optical** lens system can be arranged so that the **light focused** by this **optical** lens system is separated based on wavelength or modulation frequency, thereby distinguishing propagation light portions...20 illumination is scattered by the microscopic aperture 12 placed in proximity thereto. The propagation **light** created due to scattering is introduced to the **focusing optical** system 15 through the microscopic aperture 12 and then conducted to the light detecting mechanism...light 20 is scattered by the microscopic aperture 152 positioned in proximity thereto. The propagation **light** created by the scattering is introduced to the **focusing optical** system 15 through the microscopic aperture 152, and then conducted to the light detecting mechanism...

15/3,K/8 (Item 8 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01085672

NEAR FIELD OPTICAL MEMORY HEAD
OPTISCHER NAHFELDKOPF FUR SPEICHER
TETE DE MEMOIRE OPTIQUE DANS LE CHAMP PROCHE

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PATENT (CC, No, Kind, Date): EP 978829 A1 000209 (Basic)
WO 9944198 990902
APPLICATION (CC, No, Date): EP 99905268 990222; WO 99JP781 990222
PRIORITY (CC, No, Date): JP 9843715 980225; JP 9843718 980225; JP 994548 990111; JP 996802 990113
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G11B-007/135
ABSTRACT WORD COUNT: 126
NOTE:
Figure number on first page: 1

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FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200006	1307
SPEC A	(English)	200006	10938
Total word count - document A			12245
Total word count - document B			0
Total word count - documents A + B			12245

...SPECIFICATION sample in a very small region is also made feasible.

In the case of a **near - field optical** microscope, there is frequently used an **optical fiber** probe provided with a very small aperture at its front end and fabricated by sharpening...

...and coating a surrounding thereof by a metal and scattered light produced by operating the **optical fiber** probe interactively with **near - field light** , is made to pass through an inner portion of the **optical fiber** probe and guided to an optical detector.

Further, observation of a surface can also be carried out by introducing light to a sample via an **optical fiber** probe to thereby generate **near - field light** at a very small aperture of the **optical fiber** probe and guiding scattered light generated by an interaction between the **near - field light** and a fine structure of a surface of

the sample to an **optical** detector by using a **focusing** system added further.

Further, near-field **light** is not only utilized for a microscope but is applicable to high density optical memory record in which **near - field light** having a high energy density is generated at a very small aperture of an **optical fiber** probe by introducing light having a comparatively large intensity to a sample via an optical...

...as an optical memory head suitable for reproduction and recording of an optical memory utilizing **near - field light** .

However, the **optical fiber** probe is provided with the sharpened front end and accordingly, the mechanical strength is not...

...is not suitable for mass production and array formation. Further, scattered light provided by disturbing **near - field light** is very weak and therefore, when the scattered light is detected by passing through an **optical fiber** , there is needed a devise for providing a sufficient light amount at a detecting unit. Further, when a sufficient magnitude of **near - field light** is generated by passing through an **optical fiber** , there is needed a devise for **focusing light** to a very small aperture portion of the **optical** fiber.

Further, according to the cantilever type optical probe, reception of scattered light from the...portion of an aperture edge portion of the tapered aperture portion 3. According to the **optical waveguide** path, one end face (light incident face) thereof constitutes an end face of the **near - field optical** memory head 11, other end face (light emitting face) is disposed at the aperture edge...memory head is suitable for mass production and can deal with array formation of the **near - field optical** memory heads.

Further, according to Embodiment 1, mentioned above, the **core** 5 and the **clad** 6 formed at the aperture edge portion of the tapered aperture portion 3 may be...

...in Fig. 1 are attached with the same notations.

In Fig. 3, according to a **near - field optical** memory head 16, the light incident face of the **core** 5 and the **clad** 6 of the **near - field optical** memory head 11 according to Embodiment 1, constitutes an upper face of the near-field...

...loss.

The illumination light 9 radiated from the light emitting face after passing through the **core** 13 forms **near - field light** of a reflective type at the information recording portion constituting the reproduction position. Similar to...in the embodiment of Fig. 3, a similar effect is achieved by using a bent **optical waveguide** path without using the reflective layer 15, constituting the upper face portion of the **near - field optical** memory head 16 by an end face (light incident face) of the **optical waveguide** path and arranging other end face (light emitting face) at the aperture edge portion of...of Embodiment 4 and is processed by a signal processing unit, not illustrated.

Therefore, by **focusing light** by the microlens 39, the propagating **light** 35 having an intensity sufficient for being able to determine a recorded state of the...constituent elements is dispensed with, further, the array formation can easily be realized.

Further, by **focusing light** by the lens, the propagating **light** having an intensity sufficient for being able to determine the recorded state of the information...

?

20/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

07528728 **Image available**
INFORMATION RECORDING AND REPRODUCING DEVICE

PUB. NO.: 2003-022560 [JP 2003022560 A]
PUBLISHED: January 24, 2003 (20030124)
INVENTOR(s): KASAMA NOBUYUKI
OMI MANABU
MITSUOKA YASUYUKI
MAEDA HIDETAKA
KATO KENJI
ARAWA TAKASHI
SHINOHARA YOKO
APPLICANT(s): SEIKO INSTRUMENTS INC
APPL. NO.: 2001-208398 [JP 20011208398]
FILED: July 09, 2001 (20010709)

ABSTRACT
... a light source to a microstructure, such as an opening, lightens the mass of a **near - field optical** head, forms the stronger **near - field light** near the microstructure and realizes recording and reproducing of information at an ultra-high density...
...tracking is performed.

SOLUTION: This information recording and reproducing device comprises the light source, the **near - field optical** head formed with the microstructure, an **optical waveguide** having a **core** and **clad** , a photodetecting section and a recording medium and uses the **near - field light** , in which the **near - field optical** head is formed with a **lens** mechanism on the surface different from the surface formed with the microstructure and the **optical waveguide** is formed with a **core** end face in mid-way of the **optical waveguide** and is formed with at least a first reflective surface and a second reflective surface...

20/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

07377159 **Image available**
INFORMATION RECORDING AND REPRODUCING DEVICE

PUB. NO.: 2002-245659 [JP 2002245659 A]
PUBLISHED: August 30, 2002 (20020830)
INVENTOR(s): KASAMA NOBUYUKI
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ARAWA TAKASHI
SHINOHARA YOKO
APPLICANT(s): SEIKO INSTRUMENTS INC
APPL. NO.: 2001-040589 [JP 20011040589]
FILED: February 16, 2001 (20010216)

ABSTRACT
... To provide an inexpensive information recording and reproducing device

which reduces the mass of a **near - field optical** head by preventing an increase in the number of components while efficiently guiding the luminous flux from a light source to a fine aperture, generates intenser **near - field light** nearby the fine aperture, and records and reproduces information fast with high density through high-speed tracking.

SOLUTION: The information recording and reproducing device, using **near - field light** , comprises a **near - field optical** head which has the fine aperture formed, a nearly rod-shaped **optical waveguide** equipped with a **core** and a **clad** , a reflecting surface which is formed on one end surface side of the **optical waveguide** so as to irradiate the **near - field optical** head with the light, a photodetection part, and a recording medium; and the **near - field optical** head has a **lens** function formed on the surface different from the fine aperture and the **optical waveguide** has a **core** end surface formed in the middle of the **optical waveguide** .

20/3,K/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

07137787 **Image available**
OPTICAL WAVEGUIDE PROBE, ITS MANUFACTURING METHOD AND SCANNING-TYPE NEAR FIELD MICROSCOPE

PUB. NO.: 2002-006159 [JP 2002006159 A]
PUBLISHED: January 09, 2002 (20020109)
INVENTOR(s): ARAWA TAKASHI
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ICHIHARA SUSUMU
APPLICANT(s): SEIKO INSTRUMENTS INC
APPL. NO.: 2001-078891 [JP 20011078891]
FILED: March 19, 2001 (20010319)
PRIORITY: 2000-117967 [JP 2000117967], JP (Japan), April 19, 2000 (20000419)

ABSTRACT

... the optical axis of the optical waveguied 2. By this, the loss of the transmission **light** 7 at the bent part 10 is reduced, and the transmission **light** 7 is **focused** into the fine aperture 5. Accordingly, the **near field light** can be effectively radiated from the fine aperture 5.

20/3,K/4 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01364947
Method for forming aperture, near field optical head and method for fabricating the same and information recording/reading apparatus
Verfahren zur Herstellung einer Aperturblende, optischer Nahfeldkopf und Verfahren zu dessen Herstellung, Vorrichtung zum Aufnehmen und

Wiedergeben von Informationen
Procede de production d'une ouverture, tete optique a champ proche et procede de production associe, appareil d'enregistrement/de reproduction des informations

PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 1162605 A2 011212 (Basic)
EP 1162605 A3 030402
APPLICATION (CC, No, Date): EP 2001304917 010605;
PRIORITY (CC, No, Date): JP 2000173852 000609; JP 2000371828 001206; JP 2000379266 001213; JP 2001126415 010424
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/00
ABSTRACT WORD COUNT: 166
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200150	754
SPEC A	(English)	200150	12318
Total word count - document A			13072
Total word count - document B			0
Total word count - documents A + B			13072

...SPECIFICATION medium 1107.
In order to lead a luminous flux from a laser 1101 to the **near field optical** head 1106, a **lens** 1102, an **optical fiber** 1103 fixed to the suspension arm 1109, a **lens** 1104 and a mirror 1105 are used.
The optical fiber 1103 is used here but...

...recording medium 1107 and recording information will be described with reference to Fig. 18.
The **near field optical** head 1106 having the aperture that is mounted on the tip end of the suspension...
...on the recording medium 1107. For this purpose, air-bearing surfaces are

formed on the **near field optical** head. Additionally, in order to allow the **near field optical** head 1106 to follow the recording medium 1107, the function of the flexure 1110 is...

...recording medium 1107. The luminous flux emitted from the laser 1101 is entered to the **near field optical** head 1106 by the **lens** 1102, the **optical fiber** 1103, the **lens** 1104 and the mirror 1105, which form a light guiding structure. Then, it is guided to the aperture of the **near field optical** head 1106 to generate a **near field light** near the aperture. The scattered light generated from the consequence of the interaction of this **near field light** with the recording medium 1107 is received by the light receiving head 1108 fixed to...

...of information. Furthermore, recording information on the recording medium 1107 is realized in which the **near field optical** head 1106 having the aperture is moved to a desired position on the recording medium as the recording medium 1107 is brought close to the aperture and the **near field light** is irradiated onto the recording medium 1107 from the aperture for writing operation.
In the...

20/3,K/5 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01344185
Optical waveguide probe and manufacturing method of the same, and scanning near field optical microscope
Lichtwellenleiter-Sonde und ihr Herstellungsverfahren, sowie optisches Nahfeld-Rastermikroskop
Sonde a guide d'ondes lumineuses et son procede de production et microscope de balayage optique a champ proche
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 1148371 A2 011024 (Basic)
EP 1148371 A3 030502
APPLICATION (CC, No, Date): EP 2001303515 010417;
PRIORITY (CC, No, Date): JP 2000117967 000419; JP 200178891 010319
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06; G12B-021/02

ABSTRACT WORD COUNT: 119
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200143	835
SPEC A	(English)	200143	7504
Total word count - document A			8339
Total word count - document B			0
Total word count - documents A + B			8339

...SPECIFICATION the foregoing embodiment as an optical micro cantilever.
As shown in the drawing, this scanning **near - field optical** microscope 1000 includes an optical micro cantilever 410, a light source 509, a **lens** 510 for condensing a propagated light from the light source and irradiating an **optical waveguide** of the optical micro cantilever, a prism 502 disposed under a sample 501 and reflecting a propagated light obtained by scattering of a **near - field light** generated at a tip of the optical micro cantilever, a **lens** 505 for condensing the propagated light from the prism, and a light detector 506 for receiving the propagated light condensed by the **lens** .
Besides, above the optical micro cantilever, the microscope includes a laser oscillator 512 for oscillating by the lens 510, and is irradiated to the minute aperture through the **optical waveguide** of the optical micro cantilever. By this, the **near - field light** is generated in the vicinity of the minute aperture of the optical micro cantilever. On...

...optical information of the sample 501 reflected by the prism 502 is condensed by the **lens** 505, and is introduced into the optical detector 506. The computer 507 receives the signal...

20/3,K/6 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01335236
Process of producing near-field light generating element
Verfahren zur Herstellung lichterzeugender Nahfeld-Elemente
Procede de production d'elements generateurs de lumiere en champ proche
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 1139121 A2 011004 (Basic)
EP 1139121 A3 031210
APPLICATION (CC, No, Date): EP 2001301662 010223;
PRIORITY (CC, No, Date): JP 200062407 000307
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G02B-003/00; G12B-021/02; G12B-021/06; G11B-007/22
ABSTRACT WORD COUNT: 118
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200140	463
SPEC A	(English)	200140	12265
Total word count - document A			12728
Total word count - document B			0
Total word count - documents A + B			12728

...SPECIFICATION portion using luminous flux coming from an optical structure such as a lens or an **optical waveguide** , the vertex of the convex-formed optical propagation component coincides with the axis of luminous...

...luminous flux coming from the optical structure. Accordingly, it is made possible to provide the **near - field light** generating element that is excellent in mass production at a low cost.

Furthermore, in the...104 and micro-aperture forming process 105.

In optical guide structure forming process 101, a **optical waveguide** substrate 301 that has an optical wave guide shown in FIG. 3 is prepared. Then...

...104 and micro-aperture forming process 105, the micro-aperture substrate 304 is prepared. The **near - field light** generating element shown in FIG.3 prepared by disposing the **optical waveguide** substrate 301, a plane micro **lens** 303 and a micro-aperture substrate 304 so that luminous flux emitted from the optical wave guide of the **optical waveguide** substrate 301 is condensed adjacent to a micro-aperture by the plane micro **lens** 303.

First, a description will be made about the optical guide structure forming process 101...there between as shown in FIG.3. As a result, luminous flux fed to the **optical waveguide** on the **optical waveguide** substrate 301 is diffused from the outgoing end of the **optical waveguide** and reflected on the incline on the **optical waveguide** substrate 301. After that, the luminous flux condensed at the micro-aperture by transmitting through the plane micro **lens** 303. Thus, **near - field light** is formed adjacent to the micro-aperture. When a storage medium or a sample is...

...by virtue of interaction among the micro-aperture the storage medium and the Sample, the **near - field light** is converted into propagation light. By receiving the propagation light with a light-receiving element ...

...by positioning a storage medium and the micro-aperture close to each other, move the **near - field light** generating element that has the

...the convex-shaped portion using luminous flux coming from an optical structure such as a **lens** or an **optical waveguide** , the vertex of the convex-formed optical propagation component coincides with the axis of luminous...

...number of production processes can be reduced. Accordingly, it is made possible to provide the **near - field light** generating element that is excellent in mass production at a low cost.
As described hereinbefore...

20/3,K/7 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01295168
Near-field optical probe and manufacturing method for same, and near-fied optical apparatus using the near-field probe
Probe fur optisches Nahfeld und Herstellungsverfahren hierzu, optisches Nahfeld-Gerat mit solcher Probe
Echantillon pour un champs proche optique et son procede de fabrication, appareil optique de champs proche utilisant cet echantillon
PATENT ASSIGNEE:
SEIKO INSTRUMENTS INC., (839492), 8 Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261, (JP), (Applicant designated States: all)
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PATENT (CC, No, Kind, Date): EP 1111426 A2 010627 (Basic)
EP 1111426 A3 030319
APPLICATION (CC, No, Date): EP 2000311436 001220;
PRIORITY (CC, No, Date): JP 99361701 991220; JP 2000130826 000428; JP 2000352778 001120
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06
ABSTRACT WORD COUNT: 137
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:
Available Text Language Update Word Count
CLAIMS A (English) 200126 1589
SPEC A (English) 200126 12611
Total word count - document A 14200
Total word count - document B 0

probe 2000 and the **lens** . Accordingly, position aligning of the **near - field optical** probe 2000 is facilitated thus simplifying operation of the scanning probe microscope 20000.

A manufacturing...field light.

(Embodiment 5)

Fig. 22 shows a structural view of a part of a **near - field optical** apparatus using a **near - field optical** probe according to a fifth embodiment of the invention. This is basically the same as...

...20000 shown in Fig. 3, and same points are omitted of illustration and explanation. The **light** from a **light** source (not shown) is propagated by an introducing fiber 630 formed by an **optical fiber** to a vicinity of the **near - field optical** probe 1000, and **focused** by a **lens** 631 provided at a tip of the introducing fiber 630 to the microscopic aperture 5. The introducing fiber 630 having the **lens** 631 at the tip can be easily fabricated by grinding a tip of a usual **optical fiber** . With this structure, because the **light focused** to the microscopic aperture 5 can be introduced, intense **near - field light** can be emitted from the microscopic aperture 5. Furthermore, because of using the introducing fiber 630 and the **lens** 631, it is possible to make a microscope objective **lens** compact and light in weight. Due to this, it is needless to say that, even...the lever.

Also, according to the second embodiment or/and the detecting means from the **near - field optical** probe, the shade region can be broadened greater than the first embodiment of the invention...

...S/N ratio is to be obtained. Also, by broadening the shade region for the **near - field optical** probe, it is possible in the scanning probe microscope to obtain an optical image without suffering from affection of leak light even if a spacing is increased between the **optical fiber** and the lever. Furthermore, where the light incidence means on the **near - field optical** probe for the scanning probe microscope collects light only by a **lens** , it is possible to obtain an optical image with high S/N ratio without suffered from leak light even if the **lens** NA is small. Meanwhile, because generally as the **lens** NA is smaller the longer the **lens** focal distance and the deeper the **lens** focal depth become, making possible to increase the spacing between the near-field probe and the **lens** . Accordingly, position aligning of the **near - field optical** probe is facilitated thus simplifying operation of the scanning probe microscope.

Also, according to the...

...CLAIMS said sample, and

a fine movement mechanism for finely moving said sample and/or said **near - field optical** probe,

wherein introducing/detecting optical system has an **optical fiber** provided at a tip with a **lens** function.

26. A method for manufacturing a near-field optical probe, comprising:

a process of...

20/3,K/8 (Item 5 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01273885

OPTICAL HEAD

OPTISCHER KOPF

TETE OPTIQUE

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LEGAL REPRESENTATIVE:
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PATENT (CC, No, Kind, Date): EP 1126449 A1 010822 (Basic)
WO 200116949 010308
APPLICATION (CC, No, Date): EP 2000954953 000823; WO 2000JP5668 000823
PRIORITY (CC, No, Date): JP 99242916 990830; JP 2000127325 000427
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12
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CLAIMS A	(English)	200134	536
SPEC A	(English)	200134	5913
Total word count - document A			6449
Total word count - document B			0
Total word count - documents A + B			6449

...SPECIFICATION through 3, a protrusion or a partial sphere is formed either on the in-slider **optical waveguide** or on the in-arm **optical waveguide** , in the optical head 400 shown in the embodiment 4, there exist those members provided on both sides, such as a weighting member 17 formed on the in-arm **optical waveguide** 11 and a weight-receiving member 18 formed on the in-slider **optical waveguide** 7, respectively, and those members are contacting each other. Although those members are shown as...

...the one is a hemisphere and the other is a protrusion. In this case, the **lens** effect of the hemispherical shape is further amplified and more amount of light can be condensed to the minute aperture 8. As the result, since the quantity of **near - field light** generated by the aperture can be increased, more improvement in SN ratio can be expected...

...be realized, by the supply of stable light given by the contact between both the **optical waveguides** and by the effect of light-condensing by a **lens** effect. Also in Fig. 5, the in-arm **optical waveguide** 11 may be formed anywhere of the arm 10, i.e., on top of, in...

20/3,K/9 (Item 6 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01211171
OPTICAL MICRO CANTILEVER, METHOD OF MANUFACTURE THEREOF, AND MICRO CANTILEVER HOLDER
OPTISCHER MIKRO-AUSLEGER, HERSTELLUNGSVERFAHREN FUR EINEN SOLCHEN UND MIKRO-AUSLEGER-HALTER
MICRO-CHANFREIN OPTIQUE, SON PROCEDE DE FABRICATION ET SON DISPOSITIF DE RETENUE

PATENT ASSIGNEE:
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LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1089066 A1 010404 (Basic)
WO 0055597 000921
APPLICATION (CC, No, Date): EP 906740 000306; WO 00JP1361 000306
PRIORITY (CC, No, Date): JP 9972218 990317; JP 3020000400 000217
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: G01N-013/14; G01B-011/30; G12B-021/06
ABSTRACT WORD COUNT: 67
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

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CLAIMS A	(English)	200114	1527
SPEC A	(English)	200114	12108
Total word count - document A			13635
Total word count - document B			0
Total word count - documents A + B			13635

...SPECIFICATION optical microcantilever 10 while scanning the surface does not exceed a set value.

Further, propagating **light** outputted from the **light** source 509 is **focused** by the lens 510 and irradiated to the microscopic aperture via the **optical waveguide** of the **optical** microcantilever 10 so that **near field light** is generated in the vicinity of the microscopic aperture of the optical microcantilever 10. Optical information of the sample 501 reflected by the prism 502 is focussed by the **lens** 505 and guided towards the photodetector 506.The computer 507 receives the signal

from the...1.

In FIG. 17, propagating light generated by a light source (not shown) enters the **optical waveguide** 2 from the light input/output end 8. The mirror 7 reflects propagating light H propagating from the **light** input/output end 8 so as to be guided towards the **lens** 92. The propagating **light** H is **focussed** in the vicinity of the microscopic aperture 6 by the **lens** 92 and **near field light** is generated in the vicinity of the microscopic aperture 6 by propagating **light** H attempting to pass through the microscopic aperture 6. With the **optical** microcantilever 80, **light** of a high energy density **focused** by the **lens** 92 can be guided towards the microscopic aperture 6 and the intensity of **near field light** irradiated from the microscopic aperture 6 can therefore be made substantial.

This optical microcantilever 90...

20/3,K/10 (Item 7 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01137399

RECORDING MEDIUM, INFORMATION RECORDING DEVICE, AND INFORMATION REPRODUCING DEVICE

AUFZEICHNUNGSMEDIUM, INFORMATIONSAUFZEICHNUNGSGERAT SOWIE INFORMATIONSWIEDERGABEGERAT

SUPPORT D'ENREGISTREMENT, DISPOSITIF D'ENREGISTREMENT D'INFORMATIONS ET DISPOSITIF DE REPRODUCTION D'INFORMATIONS

PATENT ASSIGNEE:
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INVENTOR:
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PATENT (CC, No, Kind, Date): EP 1107238 A1 010613 (Basic)
WO 200008639 000217

APPLICATION (CC, No, Date): EP 99936991 990804; WO 99JP4248 990804

PRIORITY (CC, No, Date): JP 98221933 980805

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE

INTERNATIONAL PATENT CLASS: G11B-007/007; G11B-007/09

ABSTRACT WORD COUNT: 169

NOTE:
Figure number on first page: 001

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FULLTEXT AVAILABILITY:

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CLAIMS A	(English)	200124	1676
SPEC A	(English)	200124	14839
Total word count - document A			16515
Total word count - document B			0
Total word count - documents A + B			16515

...SPECIFICATION 8 introduced from a laser light source (not shown), e.g. several tenth of nanometers. **Near - field light** 5 is produced in the microscopic aperture 2 by introducing the laser light 8. In...

...in place thereof. For example, it is possible to utilize an probe capable of producing **near - field light** in an illumination mode as described before, including an **optical fiber** probe comprising an **optical fiber** having a microscopic aperture at a tip and coated with metal over a surface and...

...optical probe having at a tip a microscopic aperture to guide laser light through an **optical waveguide** . However, in this case, there is a need to independently arrange the photo-detector together with an optical **lens** system in the vicinity of the probe.
The near-field light 5 produced in the...

20/3,K/11 (Item 8 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01079549
OPTICAL PROBE FOR PROXIMITY FIELD
OPTICHE SONDE FUR NAHFELD
SONDE OPTIQUE POUR CHAMP DE PROXIMITE
PATENT ASSIGNEE:
Seiko Instruments Inc., (839497), 8 Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP), (Applicant designated States: all)
INVENTOR:
MITSUOKA, Yasuyuki, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
CHIBA, Norio, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
KASAMA, Nobuyuki, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
NIWA, Takashi, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
NAKAJIMA, Kunio, Seiko Inst. Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba 261-8507, (JP)
LEGAL REPRESENTATIVE:
Watkin, Timothy Lawrence Harvey et al (88631), Mewburn Ellis, York House, 23 Kingsway, London, WC2B 6HP, (GB)
PATENT (CC, No, Kind, Date): EP 981051 A1 000223 (Basic)
WO 9940445 990812
APPLICATION (CC, No, Date): EP 99902848 990205; WO 99JP514 990205
PRIORITY (CC, No, Date): JP 9824801 980205
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G01N-037/00
ABSTRACT WORD COUNT: 150

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200008	470
SPEC A	(English)	200008	5406
Total word count - document A			5876
Total word count - document B			0
Total word count - documents A + B			5876

...SPECIFICATION lens positioned immediately in front of the microscopic aperture and adapted for mass production.

A **near - field optical** probe according to the present invention is characterized in that a cantilever is arranged in place of the flat surface substrate to have an **optical waveguide** formed with a microscopic aperture at a projection, the planar **lens** being arranged adapted to a light incident surface of the **optical waveguide** .

Accordingly, the light given from the light source can be efficiently collected to the microscopic...view of a near-field optical probe according to Embodiment 5.

In FIG. 7, an **optical waveguide** for a cantilever type **optical waveguide** probe is arranged in place of the silicon substrate 1 of FIG. 1 explained in Embodiment 1. The **optical waveguide** 13 has a light incident surface on which the planar **microlens** 5 as explained in Embodiment 1 is arranged in contact therewith. The planar **microlens** 5 has a surface emitting laser 4 as a light source arranged on a top surface thereof. This can achieve more intensive light collection and lossless light introduction to the **optical waveguide** as compared to the conventional structure implemented by a usual **lens** optical system, thus efficiently creating a near field in the aperture 3. This case is suited for use as an optical probe for a **near - field optical** microscope rather than use as an optical memory head.

Also, also in a cantilever type...

...generate a near field in the aperture, as in the case of the cantilever type **optical waveguide** probe. This case is also suited for use as an optical probe for a **near - field optical** microscope rather than use as an optical memory head.

Incidentally, in Embodiment 5, the planar...

20/3,K/12 (Item 1 from file: 350)

014941050 **Image available**
WPI Acc No: 2003-001563/200301
XRPX Acc No: N03-001069

Optical disk drive has microlens formed on surface of near field optical head opposite to surface having minute aperture

Patent Assignee: SEIKO INSTR INC (DASE); KASAMA N (KASA-I); KATO K (KATO-I); MAEDA H (MAED-I); MITSUOKA Y (MITS-I); NIWA T (NIWA-I); OUMI M (OUMI-I); SHINOHARA Y (SHIN-I)

Inventor: KASAMA N; KATO K; MAEDA H; MITSUOKA Y; NIWA T; OUMI M; SHINOHARA Y

Number of Countries: 028 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1233410	A2	20020821	EP 2002251022	A	20020214	200301	B
US 20020114260	A1	20020822	US 200268450	A	20020207	200301	
JP 2002245659	A	20020830	JP 200140589	A	20010216	200301	

Priority Applications (No Type Date): JP 200140589 A 20010216

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1233410	A2	E	17	G11B-007/12	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
US 20020114260	A1			G02B-006/26	
JP 2002245659	A		11	G11B-007/135	

Abstract (Basic):

... A **near field optical** head (104) has a **microlens** (205) formed on the surface of the head opposite to the surface having a minute aperture (206). A reflection surface (203) formed on end faces of a rod-like **optical waveguide** (103), radiates light to the head.

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File 344:Chinese Patents Abs Aug 1985-2003/Nov
         (c) 2003 European Patent Office
File 347:JAPIO Oct 1976-2003/Sep(Updated 040105)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200402
         (c) 2004  Thomson Derwent
? ds

Set     Items   Description
S1        993   NEAR()FIELD()(LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR -
              SCAN? ? OR SCANNING) OR NFR
S2     235283   OPTIC?(N)(FIBER? ? OR FIBRE? ? OR WAVEGUID? OR WAVE()GUIDE-
              ?) OR (CORE AND CLAD)
S3       2823   (MINUTE OR MINIATURE OR MICROSCOPIC OR EXTREMELY()(SMALL OR
               LITTLE))(3N)(APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S4      71660   (CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR CONCENTE-
              R? OR CONCENTRING OR CONCENTRE?)(10N)(LIGHT OR OPTIC? OR LASE-
              R? ?)
S5     309084   MICROLENS??? OR LENS??? OR MICRO()LENS???
S6     712055   REFLECT? OR MIRROR? OR DEFLECT?
S7       6710   INTERNAL?(3N)(REFLECT? OR MIRROR? OR DEFLECT?)
S8        391   (RECORD? OR REPRODUCT? OR REPLICA? OR DUPLICAT?)(S)S1
S9          2   IC=(G02B-006/26 AND G02B-006/42 AND G11B-007/00 AND G11B-0-
              07/135)
S10       315   S1 AND IC=(G02B-006/26 OR G02B-006/42 OR G11B-007/00 OR G1-
              1B-007/135)
S11        86   S10 AND (S4 OR S5)
S12        10   S11 AND S2
S13         7   S11 AND S3
S14        16   (S12 OR S13)
S15        11   S14 AND S6
S16        11   IDPAT (sorted in duplicate/non-duplicate order)
S17         9   IDPAT (primary/non-duplicate records only)
S18         8   S17 NOT S9
S19         5   S14 NOT S15
S20         5   IDPAT (sorted in duplicate/non-duplicate order)
S21         5   S20 NOT S9
S22         0   S8 AND S2 AND S4 AND S5 AND S7
S23        39   S8 AND S2
S24         1   S23 AND S4
S25         0   S24 NOT (S14 OR S9)
S26        32   S23 NOT (S14 OR S9)
S27         1   S26 AND S5
S28         1   S27 NOT (S14 OR S9)
S29     96734   CONCAVE
S30         2   S8 AND S29
S31         2   S30 NOT (S14 OR S9 OR S28)
```

9/3,K/1 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

014941050 **Image available**
WPI Acc No: 2003-001563/200301
XRPX Acc No: N03-001069

Optical disk drive has microlens formed on surface of near field optical head opposite to surface having minute aperture

Patent Assignee: SEIKO INSTR INC (DASE); KASAMA N (KASA-I); KATO K (KATO-I); MAEDA H (MAED-I); MITSUOKA Y (MITS-I); NIWA T (NIWA-I); OUMI M (OUMI-I); SHINOHARA Y (SHIN-I)
Inventor: KASAMA N; KATO K; MAEDA H; MITSUOKA Y; NIWA T; OUMI M; SHINOHARA Y
Number of Countries: 028 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1233410	A2	20020821	EP 2002251022	A	20020214	200301	B
US 20020114260	A1	20020822	US 200268450	A	20020207	200301	
JP 2002245659	A	20020830	JP 200140589	A	20010216	200301	

Priority Applications (No Type Date): JP 200140589 A 20010216
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1233410	A2	E	17	G11B-007/12	
	Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR				
US 20020114260	A1			G02B-006/26	
JP 2002245659	A		11	G11B-007/135	

International Patent Class (Main): **G02B-006/26** ...

... **G11B-007/135**
...International Patent Class (Additional): **G02B-006/42** ...

... **G11B-007/00**

9/3,K/2 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

012804673 **Image available**
WPI Acc No: 1999-610903/199952
Related WPI Acc No: 1999-610902; 1999-633652; 2000-013021; 2002-253943
XRAM Acc No: C99-177833
XRPX Acc No: N99-450152

Low noise optical element for optical data storage system

Patent Assignee: SEAGATE TECHNOLOGY INC (SEAG-N); SEAGATE TECHNOLOGY LLC (SEAG-N); GRAY G R (GRAY-I); TSELIKOV A (TSEL-I); WILDE J P (WILD-I); ZHANG Y (ZHAN-I)
Inventor: GRAY G R; TSELIKOV A; WILDE J P; ZHANG Y
Number of Countries: 023 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9950844	A1	19991007	WO 99US7055	A	19990330	199952	B
EP 1066631	A1	20010110	EP 99916222	A	19990330	200103	
			WO 99US7055	A	19990330		
CN 1295710	A	20010516	CN 99804652	A	19990330	200146	

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KR 2001042354  A    20010525  KR 2000710919    A   20000930  200168
US 20020172134  A1  20021121  US 9879903       P   19980330  200279
                              US 9888192       P   19980605
                              US 98108398      P   19981113
                              US 98111470      P   19981209
                              US 99283896      A   19990330
                              US 2001938225    A   20010822
US 6538974      B2  20030325  US 9879903       P   19980330  200325
                              US 9888192       P   19980605
                              US 98108398      P   19981113
                              US 98111470      P   19981209
                              US 99283896      A   19990330
                              US 2001938225    A   20010822
JP 2003522362   W   20030722  WO 99US7055      A   19990330  200350
                              JP 2000541681    A   19990330
KR 381936       B   20030426  WO 99US7055      A   19990330  200355
                              KR 2000710919    A   20000930

Priority Applications (No Type Date): US 99283896 A 19990330; US 9879903 P
  19980330; US 9888192 P 19980605; US 98108398 P 19981113; US 98111470 P
  19981209; US 2001938225 A 20010822
Patent Details:
Patent No  Kind Lan Pg   Main IPC     Filing Notes
WO 9950844     A1 E  58 G11B-007/135
   Designated States (National): CN JP KR SG
   Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU
   MC NL PT SE
EP 1066631     A1 E     G11B-007/135  Based on patent WO 9950844
   Designated States (Regional): DE GB
CN 1295710     A        G11B-007/135
KR 2001042354  A        G11B-007/135
US 20020172134 A1        G02B-006/26   Provisional application US 9879903

                                       Provisional application US 9888192
                                       Provisional application US 98108398
                                       Provisional application US 98111470
                                       Div ex application US 99283896
US 6538974     B2        G11B-007/00   Provisional application US 9879903
                                       Provisional application US 9888192
                                       Provisional application US 98108398
                                       Provisional application US 98111470
                                       Div ex application US 99283896
JP 2003522362  W      77 G11B-007/135  Based on patent WO 9950844
KR 381936      B         G11B-007/135  Previous Publ. patent KR 2001042354
                                       Based on patent WO 9950844

International Patent Class (Main):  G02B-006/26 ...
... G11B-007/00 ...

... G11B-007/135
International Patent Class (Additional):  G02B-006/42 ...
?
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18/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

07621269 **Image available**
INFORMATION RECORDING/REPRODUCING DEVICE, OPTICAL SYSTEM AND OPTICAL ELEMENT

PUB. NO.: 2003-115120 [JP 2003115120 A]
PUBLISHED: April 18, 2003 (20030418)
INVENTOR(s): HATANO HIROSHI
OGURA KAZUYUKI
APPLICANT(s): MINOLTA CO LTD
APPL. NO.: 2001-305097 [JP 20011305097]
FILED: October 01, 2001 (20011001)

INTL CLASS: G11B-007/09; G11B-007/004; **G11B-007/135**

ABSTRACT

...and optical element suitable therefor.

SOLUTION: A recording/reproducing light DL is converged on a **minute opening** 19H which is formed on a thin film 19 located at an almost center of a flat surface part 18U of an immersion **lens** SIL formed by a medium having the high refractive index, to generate a **near - field light** NP1 for the recording/ reproducing operation, then minute recording pits DP are formed on land...

... that of a spot of the recording/reproducing light DL. Tracking light TL is totally **reflected** at the position where no thin film 19 exists in the flat surface part 18U, being the nearest position to the **minute opening** 19H. Then a tracking spot TS over the groove part 20G is made to be minute for generating a **near - field light** NP2 for tracking, and the recording/reproducing position becomes near to the tracking position in...

18/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

06578003 **Image available**
OPTICAL HEAD, DISK DEVICE, AND MANUFACTURE OF OPTICAL HEAD

PUB. NO.: 2000-163794 [JP 2000163794 A]
PUBLISHED: June 16, 2000 (20000616)
INVENTOR(s): KAMIYANAGI KIICHI
APPLICANT(s): FUJI XEROX CO LTD
APPL. NO.: 11-125205 [JP 99125205]
FILED: April 30, 1999 (19990430)
PRIORITY: 10-126528 [JP 98126528], JP (Japan), May 08, 1998 (19980508)
10-268014 [JP 98268014], JP (Japan), September 22, 1998 (19980922)

INTL CLASS: **G11B-007/135** ; G01N-013/14; G01N-013/10; G02B-013/00; G11B-007/22

ABSTRACT

...2, the laser beam 2a is shaped into a parallel beam 2b by a collimator **lens** 3, and is **reflected** a **mirror** 4 before converged by an object

lens 5, and then made incident on a plane of incidence 6a of a transparent medium...
... condensed on a plane 6b for condensation, and a light spot 9 is formed, and **near field light** 10 seeps out of a **minute hole** 7a in the direction orthogonal to a recording track. The **near field light** seeping out of the **minute hole** 7a is made incident to a recording film 8a of a recording medium 8 as...

18/3,K/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

06578002 **Image available**
OPTICAL HEAD, DISK DEVICE, AND MANUFACTURE OF OPTICAL HEAD

PUB. NO.: 2000-163793 [JP 2000163793 A]
PUBLISHED: June 16, 2000 (20000616)
INVENTOR(s): KAMIYANAGI KIICHI
BABA KAZUO
APPLICANT(s): FUJI XEROX CO LTD
APPL. NO.: 11-072783 [JP 9972783]
FILED: March 17, 1999 (19990317)
PRIORITY: 10-070501 [JP 9870501], JP (Japan), March 19, 1998 (19980319)
10-267656 [JP 98267656], JP (Japan), September 22, 1998 (19980922)

INTL CLASS: **G11B-007/135** ; G01N-013/10; G02B-003/00; G11B-007/22

ABSTRACT
...2, the laser beam 2a is shaped into a parallel beam 2b by a collimator **lens** 3, and is **reflected** on a **mirror** 4 before converged by an object **lens** 5, and then made incident on a plane of incidence 6a of a transparent medium...
... condensed on a plane 6b for condensation, and a light spot 9 is formed, and **near field light** 10 seeps out of a **minute hole** 7a. The **near field light** seeping out of the **minute hole** 7a is made incident to a recording film 8a of a recording medium 8 as...

18/3,K/4 (Item 4 from file: 347)
DIALOG(R)File 347:JAPIO

04899680 **Image available**
NEAR - FIELD OPTICAL SCAN RECORDING AND REPRODUCING DEVICE

PUB. NO.: 07-192280 [JP 7192280 A]
PUBLISHED: July 28, 1995 (19950728)
INVENTOR(s): KIYOMATSU SATOSHI
KOJIMA KOKI
KONO HARUHIKO
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-336636 [JP 93336636]
FILED: December 28, 1993 (19931228)

NEAR - FIELD OPTICAL SCAN RECORDING AND REPRODUCING DEVICE

INTL CLASS: G11B-007/09; G02B-027/56; **G11B-007/00** ; **G11B-007/135**

JAPIO KEYWORD:R002 (LASERS); R009 (HOLOGRAPHY); R012 (**OPTICAL FIBERS**); R102 (APPLIED ELECTRONICS...

ABSTRACT

...CONSTITUTION: Laser beams radiated from a semiconductor laser 1 are converged by a **lens** 6 and applied through an opening 8 to an **optical fiber** . A scanning head 9 formed at the head part of the tip of the **optical fiber** 7 is provided with an opening 10, of which diameter is equal or smaller than...

...end face and a recording plane 11 is moved relatively to the opening 10. The **reflected** light extracted from the recording plane 11 through a scanning head 9 is detected by...

... head 9 is provided with a semiconductor laser 15 as its own original light source, **lens** system and optic/electric converting element 19 and generates a tracking error detect signal for...

18/3,K/5 (Item 5 from file: 347)
DIALOG(R)File 347:JAPIO

04899668 **Image available**
NEAR FIELD LIGHT SCANNING RECORDING AND REPRODUCING DEVICE

PUB. NO.: 07-192268 [JP 7192268 A]
PUBLISHED: July 28, 1995 (19950728)
INVENTOR(s): KIYOMATSU SATOSHI
KONO HARUHIKO
KOJIMA KOKI
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-336635 [JP 93336635]
FILED: December 28, 1993 (19931228)

NEAR FIELD LIGHT SCANNING RECORDING AND REPRODUCING DEVICE

INTL CLASS: **G11B-007/00** ; G02B-027/56; **G11B-007/135**
JAPIO KEYWORD:R002 (LASERS); R009 (HOLOGRAPHY); R012 (**OPTICAL FIBERS**); R102 (APPLIED ELECTRONICS...

ABSTRACT

... beams radiated from a semiconductor laser 1 are converted into parallel beams by a collimator **lens** 6 and projected to a translucent recording medium 8. The recording medium 8 fully **reflects** the introduced parallel beams at an incident angle less than 45 deg. respectively on a...

... light generated on the face 8b is fetched into a scanning probe 11 composed of **optical fibers** . A fine opening 13 provided on the tip face of the scanning probe 11 optically...

18/3,K/6 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015258639 **Image available**
WPI Acc No: 2003-319568/200331
XRPX Acc No: N03-254807

Information recording and reproducing apparatus for high density recording and reproduction of information has optical head which irradiates beam even small beam are reflected **by** reflecting **surfaces**

Patent Assignee: SEIKO INSTR INC (DASE)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2003022560	A	20030124	JP 2001208398	A	20010709	200331	B

Priority Applications (No Type Date): JP 2001208398 A 20010709
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2003022560	A		10	G11B-007/135	

... **recording and reproduction of information has optical head which irradiates beam even small beam are** reflected **by** reflecting **surfaces**

Abstract (Basic):
... A **lens** function is formed on the surface of an optical head (104) different from a surface where a micro opening (206) is formed. Two **reflecting** surfaces are formed to an **optical waveguide** (103) with a core end face (203) at the middle. The optical head irradiates beam even if small beam emitted from the core end face is **reflected** by the **reflecting** surfaces.
... to micro opening. Weight of optical head is reduced. Cost reduction is attained. Generates strong **near - field light** on micro opening periphery...

...The figure shows the explanatory diagram of the optical head and **optical waveguide** of the apparatus...

... **Optical waveguide** (103
...Title Terms: **REFLECT** ;
International Patent Class (Main): **G11B-007/135**

18/3,K/7 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014417182 **Image available**
WPI Acc No: 2002-237885/200229
XRPX Acc No: N02-183152
Near-field head for optical disk capable of generating intensive and constant light
Patent Assignee: SEIKO INSTR INC (DASE); KASAMA N (KASA-I); KATO K (KATO-I); MAEDA H (MAED-I); MITSUOKA Y (MITS-I); NIWA T (NIWA-I); OUMI M (OUMI-I); SHINOHARA Y (SHIN-I)
Inventor: KASAMA N; KATO K; MAEDA H; MITSUOKA Y; NIWA T; OUMI M; SHINOHARA Y
Number of Countries: 028 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20010033529	A1	20011025	US 2001833147	A	20010411	200229	B
JP 2001307348	A	20011102	JP 2000119753	A	20000420	200229	
EP 1150286	A2	20011031	EP 2001303370	A	20010410	200229	

Priority Applications (No Type Date): JP 2000119753 A 20000420
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes

US 20010033529 A1 18 G11B-007/95
JP 2001307348 A 12 G11B-007/09
EP 1150286 A2 E G11B-007/12
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR

Abstract (Basic):
... The head condenses the light from the source and irradiates it on the **minute opening** . Then the **reflected** light from the light condensing mark which is provided on the circumference of the **minute opening** is detected. The relative position between the light condensing point condensed by the **lens** and the light condensing mark (501) is detected so that the light condensing point is controlled to follow the light condensing mark. Generating intensive and constant **near - field light** .
... noise ratio can be obtained. This can be obtained even when rapid scanning of the **minute opening** over the recording medium...

...The drawing shows a block diagram of the **near - field optical** head
...
...International Patent Class (Additional): **G11B-007/135**

18/3,K/8 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010476707 **Image available**
WPI Acc No: 1995-378028/199549
Near field optical **recording and reproduction apparatus - generates light beam using semiconductor laser with collimator** lenses **which are 1/4 wavelengths apart and** optical fibre **set at** focus **of condensing** lens
Patent Assignee: MATSUSHITA DENKI SANGYO KK (MATU)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 7254185	A	19951003	JP 9445680	A	19940316	199549	B

Priority Applications (No Type Date): JP 9445680 A 19940316
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 7254185	A		6	G11B-011/10	

Near field optical **recording and reproduction apparatus...**

...generates light beam using semiconductor laser with collimator lenses **which are 1/4 wavelengths apart and** optical fibre **set at** focus **of condensing** lens

...Abstract (Basic): external resonance circuit. The circuit consists of an optomagnetic recording medium (18) and a half **mirror** (21). A generator (17) generates and **concentrates light** from a small area in the edge of **optical** system onto the optomagnetic recording medium. A collimator **lens** is set in both sides of the semiconductor laser to provide light. The semiconductor laser and the collimator **lens** are 1/4 wavelength apart...

...The collimator **lens** and a condensing **lens** are set individually. One side of the half **mirror** is set at the **focus** position with the

condensing **lens** . The conversion **lens** converts **light** which penetrates half **mirror** into parallel light. A separator unit separates the light converted by conversion **lens** into two polarised light beams. The detector unit detects the **light** separated by separation circuit. The **optical** **fibre** is set at **focus** position with condensing **lens** .

...Title Terms: **LENS** ;
International Patent Class (Additional): **G11B-007/135**
?

21/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

07723271 **Image available**
RECORDING MEDIUM, OPTICAL PROBE AND INFORMATION RECORDING AND REPRODUCING DEVICE

PUB. NO.: 2003-217172 [JP 2003217172 A]
PUBLISHED: July 31, 2003 (20030731)
INVENTOR(s): TAKAHASHI JUNICHI
TOYOSHIMA NOBUAKI
MIURA HIROSHI
APPLICANT(s): RICOH CO LTD
APPL. NO.: 2002-011252 [JP 200211252]
FILED: January 21, 2002 (20020121)

INTL CLASS: G11B-007/24; G11B-007/007; G11B-007/09; **G11B-007/135**

ABSTRACT
... in the direction parallel to the direction of a data row. An electric field by **near field light** generated at a **minute aperture** 11 at the tip of the optical probe 8 by irradiating the **optical** probe 8 with a **laser** beam is **focused** on the stripes 22 with low resistance or the dots 41 with low resistance, the...

21/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

07591946 **Image available**
OPTICAL ELEMENT, OPTICAL SYSTEM, AND INFORMATION RECORDING AND REPRODUCING DEVICE

PUB. NO.: 2003-085790 [JP 2003085790 A]
PUBLISHED: March 20, 2003 (20030320)
INVENTOR(s): HATANO HIROSHI
OGURA KAZUYUKI
SAKATA TADAFUMI
APPLICANT(s): MINOLTA CO LTD
APPL. NO.: 2001-275148 [JP 20011275148]
FILED: September 11, 2001 (20010911)

INTL CLASS: G11B-007/09; **G11B-007/135**

ABSTRACT
...information recording and reproducing device.

SOLUTION: Recording and reproducing light DL is converged on a **minute aperture** 19H formed in a thin film 19, which is provided in an approximate center part of a plane part 18U of a **lens** SIL made of a medium having a high refractive index, to generate **near - field light** NP, and a minute recording pit DP is formed on a land part 20L. The...

...where the thin film 19 is not provided and which is as close to the **minute aperture** 19H as possible, and a tracking spot TS is formed on the groove part 20G...

21/3,K/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015270462 **Image available**
WPI Acc No: 2003-331391/200331
XRPX Acc No: N03-265489
Self-aligning package for micro-optical electromechanical device, has package frame with V-grooves to align optical interconnect with die having micro-mechanical devices, when frame and die engage mutually
Patent Assignee: 3M INNOVATIVE PROPERTIES CO (MINN)
Inventor: CARPENTER B S
Number of Countries: 100 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030021541	A1	20030130	US 2001911951	A	20010724	200331	B
WO 200310087	A2	20030206	WO 2002US19170	A	20020611	200331	

Priority Applications (No Type Date): US 2001911951 A 20010724
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030021541	A1		14	G02B-006/26	
WO 200310087	A2	E		B81B-007/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW

Abstract (Basic):
... surface (26) of the frame includes V-grooves (29) to align optical interconnect such as **optical fiber** with the aperture and the die, when the reference surfaces of the frame and the...
... data storage devices, laser scanners, printer heads, magnetic heads, micro-spectrometer, accelerometers, scanning-probe microscopes, **near - field optical** microscopes, optical scanners, optical modulators, **micro lenses** , optical switches, micro-robotic, wavelengths specific equalizer, polarization mode dispersion compensators, etc., and also for...

...The self-aligning package stably and efficiently aligns optical interconnects such as **optical fiber** and/or **lens** with optical micro-mechanical devices. Hence physical damage during handling or operation of the MOEMS...
...International Patent Class (Main): **G02B-006/26**

21/3,K/4 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014951954 **Image available**
WPI Acc No: 2003-012467/200301
Micro near - field optical **data storage head using sil**
Patent Assignee: KOREA ELECTRONICS & TELECOM RES INST (KOEL-N)
Inventor: BAEK M C; CHO G I; HAN G P; KIM T Y; SON Y J
Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2002051213	A	20020628	KR 200080801	A	20001222	200301	B

Priority Applications (No Type Date): KR 200080801 A 20001222
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2002051213	A		1	G11B-007/135	

Micro near - field optical **data storage head using sil**

Abstract (Basic):
... A micro **near - field optical** data storage head using an SIL(Solid Immersion **Lens**) is provided to use the SIL for a big size **lens** , and to use diffraction elements for the rest parts, thereby minimizing the size.
... An **optical waveguide** (201) has a plane shape. At least more than one condensing diffraction grating(203) is attached to one of both sides of the **optical waveguide** , and changes a path of an incident light(202) to an SIL(205). More than...

...light(209). The SIL is composed of a curved part and a plane part, and **concentrates** the incident **light** on one point of the plane part. A coil(206) is attached to an option...
International Patent Class (Main): **G11B-007/135**

21/3,K/5 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

009659378 **Image available**
WPI Acc No: 1993-352929/199345
XRPX Acc No: N93-272235
High density optical data storage unit for electronic information - has read-write arrangement with diffraction-limited optical elements and second portion with near - field optical **elements**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: POHL W; POHL W D
Number of Countries: 001 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 568753	A1	19931110	EP 92810334	A	19920507	199345	B
US 5461600	A	19951024	US 92978015	A	19921118	199548	
			US 94311823	A	19940922		
US 5598387	A	19970128	US 92978015	A	19921118	199710	
			US 94311823	A	19940922		
			US 95484245	A	19950607		

Priority Applications (No Type Date): EP 92810334 A 19920507
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 568753	A1	E	14	G11B-007/00	
US 5461600	A		10	G11B-007/135	Cont of application US 92978015
US 5598387	A		11	G11B-007/135	Cont of application US 92978015 Div ex application US 94311823 Div ex patent US 5461600

... **has read-write arrangement with diffraction-limited optical elements and second portion with** near - field optical **elements**

...Abstract (Basic): elements (8..14) for addressing any selected one of the cells. A second portion comprises **near - field optical** elements (15..17) for selecting anyone of the bit areas within the respective addressed storage...

...Abstract (Equivalent): a plurality of **near field optical** elements each having a diameter in the range of 10-100 nanometers, each located proximate...

... an interrogation light source **for providing** light to the **near field optical elements ; and**

...

...a plurality of diffraction limited optical elements, each associated with one of the **near field optical** elements, each optical element for receiving particularly scattered light from its associated **near field optical** element.

...

...overlying the probe substrate, a light transparent layer overlying the semiconductor diodes, a plurality of **micro lenses** each directly overlying an associated one of the semiconductor diodes, an **optical waveguide** overlying the plurality of **micro lenses** , a semitransparent layer overlying the **optical waveguide** layer, and a plurality of **near field optical** protrusions having a diameter in the range of 10-100 nanometer attached to the semitransparent layer, each **near field optical** protrusion directly overlying an associated one of the semiconductor diodes, the probe assembly being located...

...an interrogation light source in optical communication with the **optical waveguide** layer for providing light to the protrusions such that particularly scattered light is received at

International Patent Class (Main): **G11B-007/00** ...

... **G11B-007/135**

?

28/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014408644 **Image available**
WPI Acc No: 2002-229347/200229
XRPX Acc No: N02-176322
Recording **and reading apparatus, for high density information, using** near - field light **with very small opening and waveguide on same side** **of** near - field light **head**
Patent Assignee: LUCENT TECHNOLOGIES INC (LUCE)
Inventor: CURTIS K R; TACKITT M C
Number of Countries: 028 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1148478	A1	20011024	EP 2000309804	A	20001106	200229	B
JP 2002006723	A	20020111	JP 2001111421	A	20010410	200229	
US 6388779	B1	20020514	US 2000553512	A	20000420	200239	

Priority Applications (No Type Date): US 2000553512 A 20000420
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1148478	A1	E	21	G11B-007/0065	
	Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR				
JP 2002006723	A		6	G03H-001/04	
US 6388779	B1			G03H-001/16	

Recording **and reading apparatus, for high density information, using** near - field light **with very small opening and waveguide on same side** **of** near - field light **head**

Abstract (Basic):
... 110) is fixed to the front end of a suspension arm (109) to float the **near - field light** head (106) with an optical coupling and a very small opening over the rotatable **record** medium (107). An optical receiving portion with a suspension arm (111) has a light receiving...

...with a very small opening and a waveguide disposed on the same side of the **near - field light** head.
... light guide with an optical propagator guides light flux of a laser (101) with a **lens** (102) and an **optical fibre** (103) that points through a **lens** (104) to a mirror (105). The optical propagator may have a prism, a diffraction grating or **optical wave guides** laminated to overlap by two or more stages...
...Because a large amount of **near - field light** is generated at the very small opening of the **near - field light** head, **reproduction** and **recording** of information with ultra high resolution, high speed and high SN ratio is made. It is not necessary to fabricate a clad portion of the **optical wave guide** , and parts are reduced using the fraction grating and prism, so the fabrication process is simplified and cost is reduced. The mass at a surrounding of the **near - field light** head is lightened using a prism...

...perspective view of the information recording and reproduction apparatus. suspension arms (109, 111)flexure (110) **near - field light** head (106) **record** medium (107)light receiving head (108...
?

31/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014217520 **Image available**
WPI Acc No: 2002-038218/200205
Device for reproducing near - field optical recording
Patent Assignee: LG ELECTRONICS INC (GLDS)
Inventor: KIM S G; SONG I S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2001053683	A	20010702	KR 9954148	A	19991201	200205	B

Priority Applications (No Type Date): KR 9954148 A 19991201
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2001053683	A		1	G11B-007/09	

Device for reproducing near - field optical recording

Abstract (Basic):
... A reproducing device for a **near - field optical recording** is provided to maintain a gap between an optical head and a disk in a ...
... gap between a disk and a solid immersion lens(3), a beam reflected on a **concave** portion of a lens formed within a critical angle of a first object lens(1...

...an unstable movement of an optical head assembly by unstable state of a drive, the **concave** portion of the lens is moved for a distance of h. Then, a defocus is...

31/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014122685 **Image available**
WPI Acc No: 2001-606897/200169
XRPX Acc No: N01-453007
Optical head for optical recording **/reproducing apparatus, has beam shaper that shapes incident laser beam into toroidal beam and directs shaped beam to solid immersion mirror generating** near - field light
Patent Assignee: MINOLTA CAMERA KK (MIOC); HATANO H (HATA-I); OGURA K (OGUR-I); SATO A (SATO-I); SUZUKI Y (SUZU-I)
Inventor: HATANO H; OGURA K; SATO A; SUZUKI Y
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20010017838	A1	20010830	US 2001770203	A	20010129	200169	B
JP 2001236673	A	20010831	JP 200039522	A	20000217	200169	

Priority Applications (No Type Date): JP 200039522 A 20000217
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20010017838	A1		12	G11B-007/135	
JP 2001236673	A		6	G11B-007/135	

Optical head for optical recording **/reproducing apparatus, has beam**

shaper that shapes incident laser beam into toroidal beam and directs shaped beam to solid immersion mirror generating near - field light

Abstract (Basic):

... 10) has a beam shaper (11) that includes two axicon lenses coaxially disposed, so that **concave** and convex conical surfaces oppose each other. The beam shaper shapes incident laser beam (L...

?

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File   2:INSPEC 1969-2003/Dec W2
         (c) 2003 Institution of Electrical Engineers
File   6:NTIS 1964-2004/Jan W1
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2004/Dec W4
         (c) 2004 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2003/Dec W4
         (c) 2003 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2003/Nov
         (c) 2003 ProQuest Info&Learning
File  62:SPIN(R) 1975-2004/Nov W3
         (c) 2004 American Institute of Physics
File  65:Inside Conferences 1993-2004/Jan W1
         (c) 2004 BLDSC all rts. reserv.
File  94:JICST-EPlus 1985-2004/Dec W4
         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Dec W3
         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2003/Nov
         (c) 2003 The HW Wilson Co.
File 144:Pascal 1973-2003/Dec W2
         (c) 2003 INIST/CNRS
File 239:Mathsci 1940-2003/Feb
         (c) 2003 American Mathematical Society
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
File 603:Newspaper Abstracts 1984-1988
         (c)2001 ProQuest Info&Learning
File 483:Newspaper Abs Daily 1986-2004/Jan 07
         (c) 2004 ProQuest Info&Learning
File 248:PIRA 1975-2003/Dec W3
         (c) 2003 Pira International
? ds

Set     Items   Description
S1      15129   NEAR()FIELD()(LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR -
            SCAN? ? OR SCANNING) OR NFR
S2     441342   OPTIC?(N)(FIBER? ? OR FIBRE? ? OR WAVEGUID? OR WAVE()GUIDE-
            ?) OR (CORE AND CLAD)
S3       1448   (MINUTE OR MINIATURE OR MICROSCOPIC OR EXTREMELY()(SMALL OR
             LITTLE))(3N)(APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S4     152675   (CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR CONCENTE-
            R? OR CONCENTRING OR CONCENTRE?)(10N)(LIGHT OR OPTIC? OR LASE-
            R? ?)
S5     252940   MICROLENS??? OR LENS??? OR MICRO()LENS???
S6    1710449   REFLECT? OR MIRROR? OR DEFLECT?
S7      21049   INTERNAL?(3N)(REFLECT? OR MIRROR? OR DEFLECT?)
S8       1147   (RECORD? OR REPRODUCT? OR REPLICA? OR DUPLICAT?)(S)S1
S9         39   AU=(KASAMA N? OR KASAMA, N?)
S10      3011   AU=(SHINOHARA, Y? OR SHINOHARA Y?)
S11     13125   AU=(MAEDA H? OR MAEDA, H?)
S12       205   AU=(MITSUOKA, Y? OR MITSUOKA Y?)
S13       302   AU=(OUMI M? OR OUMI, M?)
S14     28494   AU=(KATO, K? OR KATO K?)
S15      2407   AU=(NIWA T? OR NIWA, T?)
S16        23   (S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15) AND S1 AND -
             S8
S17        11   RD S16 (unique items)
S18         8   S17 NOT PY>2002
```

S19	1	S18 AND S4
S20	7	S18 NOT S19
S21	2	S20 AND (S5 OR S6 OR S7 OR S2 OR S3)
S22	5	S20 NOT S21
S23	0	S8 AND S2 AND S3 AND S4 AND S5 AND S7
S24	0	S8 AND S2 AND S3 AND S4 AND S5
S25	0	S1 AND S2 AND S3 AND S4 AND S5
S26	19	S1 AND S2 AND S3
S27	0	S26 AND (S4 OR S5)
S28	0	S26 AND S8
S29	229	S8 AND (S4 OR S5)
S30	15	S29 AND S2
S31	986264	(APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S32	12	S30 AND S31
S33	9	RD S32 (unique items)
S34	5	S33 NOT PY>2002
S35	4	S34 NOT S18
S36	3	S30 NOT S32
S37	3	S36 NOT (S18 OR PY>2002)
S38	3	RD S37 (unique items)

19/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7492332 INSPEC Abstract Number: A2003-03-4280T-057, B2003-02-4120-080, C2003-02-5320K-046
Title: High-speed readout using small near - field optical **head module with horizontal light introduction through optical fiber**
Author(s): **Kato, K.** ; Ichihara, S.; **Maeda, H.** ; **Oumi, M.** ; **Niwa, T.** ; **Mitsuoka, Y.** ; Nakajima, K.; Ohkubo, T.; Itao, K.
Author Affiliation: Seiko Instrum. Inc., Chiba, Japan
Conference Title: 2002 International Symposium on Optical Memory and Optical Data Storage Topical Meeting. Joint International Symposium. Technical Digest (Cat.No.02EX552) p.198-200
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2002 Country of Publication: USA (xiii+439+ii+70 suppl.) pp.
ISBN: 0 7803 7379 0 Material Identity Number: XX-2002-02643
U.S. Copyright Clearance Center Code: 0-7803-7379-0/02/$17.00
Conference Title: 2002 International Symposium on Optical Memory and Optical Data Storage Topical Meeting. Joint International Symposium on Optical Memory and Optical Data Storage 2002. Technical Digest
Conference Sponsor: IEEE/Lasers & Electro-Opt. Soc.; OSA - Opt. Soc. America; SPIE - Int. Soc. Opt. Eng.; JSAP - Japan Soc. Appl. Phys.; MSJ - Magnetics Soc. Japan; OITDA - Optoelectron. Ind. & Technol. Dev. Assoc.; IEICE; Chemical Soc. Japan; Inf. Process. Soc. Japan; Inst. Electr. Eng. Japan; Inst. Image Inf. & Telev. Eng.; Japan Soc. Precision Eng.; Laser Soc. Japan
Conference Date: 7-11 July 2002 Conference Location: Waikoloa, HI, USA
Language: English
Subfile: A B C

Title: High-speed readout using small near - field optical **head module with horizontal light introduction through optical fiber**
Author(s): **Kato, K.** ; Ichihara, S.; **Maeda, H.** ; **Oumi, M.** ; **Niwa, T.** ; **Mitsuoka, Y.** ; Nakajima, K.; Ohkubo, T.; Itao, K.
Abstract: **Near - field optics** , a super-resolution technique, is expected for optical data storage with high **recording** density (E. Betzig et al., Appl. Phys. Lett. vol. 61, p. 142, 1992; S. Hosaka et al, Nanotechnology vol. 8, p. A58, 1997). Recently, **near - field optical** heads using sliders, which can keep the distance between an aperture and a medium surface...

... 1279, 2000). These optical heads use an objective lens above sliders separately, to introduce the **focused light** to the aperture. However, this large **light** introduction using the objective lens leads optical heads with actuators to be large. From this perspective, we had proposed a small **near - field optical** head module with miniaturized light introduction (K. Kato et al., Tech. Dig. ISOM2000, p. 188...
...Descriptors: **optical focusing**
...Identifiers: small **near - field optical** head module...

... **near - field optics** ; ...

... **focused light** introduction
?

21/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

5251030 INSPEC Abstract Number: A9611-0760P-003
Title: Optical processing and recording **by scanning** near - field optic **/atomic-force microscope (SNOAM)**
Author(s): Nakajima, K.; **Mitsuoka, Y.** ; Chiba, N.; Muramatsu, H.; Ataka, T.; Fujihira, M.
Author Affiliation: Res. Lab. for Adv. Technol., Seiko Instrum. Inc., Chiba, Japan
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.2535 p.16-27
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1995 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1995)2535L.16:OPRS;1-6
Material Identity Number: C574-95219
U.S. Copyright Clearance Center Code: 0 8194 1894 3/95/$6.00
Conference Title: Near-Field Optics
Conference Sponsor: SPIE
Conference Date: 9-10 July 1995 Conference Location: San Diego, CA, USA
Language: English
Subfile: A

Title: Optical processing and recording **by scanning** near - field optic **/atomic-force microscope (SNOAM)**
Author(s): Nakajima, K.; **Mitsuoka, Y.** ; Chiba, N.; Muramatsu, H.; Ataka, T.; Fujihira, M.
Abstract: The paper describes the design and applications to optical processing and recording of a Scanning **Near - field Optic** /Atomic-force Microscope (SNOAM). A sharpened and bent **optical fiber** was used as a **near - field optical** probe as well as an atomic force microscope probe in a vertical vibrating mode. SNOAM...
...Descriptors: **optical fibres** ;
Identifiers: scanning **near - field optic** /atomic-force microscope...

... **optical fiber** ; ...

... **near - field optical** probe

21/3,K/2 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

04044961 JICST ACCESSION NUMBER: 99A0267413 FILE SEGMENT: JICST-E
Magneto-optical Imaging by Scanning Near - field Optical **Microscope Using Polarization Modulation Technique.**
ISHIBASHI T (1); YOSHIDA T (1); YAMAMOTO J (1); SATO K (1); **MITSUOKA Y** (2); NAKAJIMA K (2)
(1) Tokyo Univ. Agriculture And Technol., Tokyo, Jpn; (2) Seiko Instruments Inc., Chiba, Jpn
Nippon Oyo Jiki Gakkaishi(Journal of the Magnetics Society of Japan), 1999, VOL.23,NO.1-2, PAGE.712-714, FIG.4, REF.9
JOURNAL NUMBER: Z0944AAE ISSN NO: 0285-0192
UNIVERSAL DECIMAL CLASSIFICATION: 535.097/.098 681.72/.75

LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

Magneto-optical Imaging by Scanning Near - field Optical **Microscope Using Polarization Modulation Technique.**
; **MITSUOKA Y** (2); NAKAJIMA K (2)
ABSTRACT: A polarization modulation technique has been applied to a scanning **near - field optical** microscope(SNOM), in order to improve sensitivity and resolution of a magneto-optical(MO) imaging. Polarized light modulated by a photoelastic modulator(PEM) was introduced into a bent-type **optical fiber** probe operated as an AFM cantilever, and transmitted MO signals were detected using a lock...

...ion laser (488nm) was used as a light source. By using this technique, images of **recorded** marks on a Pt/Co disk were successfully obtained, which were written by a magnetic...
?

22/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7296621 INSPEC Abstract Number: A2002-15-4280T-002, B2002-07-4120-020
Title: Simulation of simultaneous tracking/data signal detection using novel aperture-mounted surface recording head
Author(s): Tanaka, K.; Ohkubo, T.; **Oumi, M.** ; **Mitsuoka, Y.** ; Nakajima, K.; Hosaka, H.; Itao, K.
Author Affiliation: Graduate Sch. of Frontier Sci., Univ. of Tokyo, Japan
Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) vol.41, no.3B p.1628-31
Publisher: Japan Soc. Appl. Phys,
Publication Date: March 2002 Country of Publication: Japan
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200203)41:3BL.1628:SSTD;1-9
Material Identity Number: F221-2002-007
Language: English
Subfile: A B

Author(s): Tanaka, K.; Ohkubo, T.; **Oumi, M.** ; **Mitsuoka, Y.** ; Nakajima, K.; Hosaka, H.; Itao, K.
Abstract: Recently, near-field surface **recording** based on **near - field optical** principles has been vigorously studied for higher data storage density. In **near - field optics** which utilizes an aperture, in addition to the high spatial resolution property, there is another...
...Identifiers: **near - field optical** principles...

... **near - field optical** head

22/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6926273 INSPEC Abstract Number: A2001-12-4280T-006, B2001-06-4120-021, C2001-06-5320K-022
Title: Numerical simulation on read-out characteristics of the planar aperture-mounted head with a minute scatterer
Author(s): Tanaka, K.; Ohkubo, T.; **Oumi, M.** ; **Mitsuoka, Y.** ; Nakajima, K.; Hosaka, H.; Itao, K.
Author Affiliation: Graduate Sch. of Frontier Sci., Tokyo Univ., Japan
Journal: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) Conference Title: Jpn. J. Appl. Phys. 1, Regul. Pap. Short Notes Rev. Pap. (Japan) vol.40, no.3B p.1542-7
Publisher: Japan Soc. Appl. Phys,
Publication Date: March 2001 Country of Publication: Japan
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200103)40:3BL.1542:NSRC;1-H
Material Identity Number: F221-2001-007
Conference Title: 10th International Symposium on Optical Memory 2000 (ISOM 2000)
Conference Sponsor: Japan Soc. Appl. Phys.; Magnetics Soc. Japan; Optoelectron. Ind. & Technol. Dev. Assoc
Conference Date: 5-8 Sept. 2000 Conference Location: Hokkaido, Japan
Language: English
Subfile: A B C

Author(s): Tanaka, K.; Ohkubo, T.; **Oumi, M.** ; **Mitsuoka, Y.** ; Nakajima, K.; Hosaka, H.; Itao, K.

Abstract: Recently, various researches on optical **recording** based on **near - field optical** principles have been conducted for higher data storage density. However, there is a problem of the trade-off between signal output and spatial resolution, especially when an aperture-type **near - field optical** head is utilized for high speed data-readout. In order to solve this problem, we propose a novel **near - field optical** head, the planar aperture-mounted head with a minute scatterer, and analyze its read-out...

...Identifiers: **near - field optical** principles...

...aperture-type **near - field optical** head

22/3,K/3 (Item 1 from file: 62)
DIALOG(R)File 62:SPIN(R)

00996783

Simulation of Simultaneous Tracking/Data Signal Detection Using Novel Aperture-Mounted Surface Recording Head

Tanaka, Kenji ; Ohkubo, Toshifumi ; **Oumi, Manabu** ; **Mitsuoka, Yasuyuki** ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Graduate School of Frontier Sciences, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan ; Seiko Instruments Inc., 563 TakatsukaShinden, Matsudo-shi, Chiba 270-2222, Japan

41(3B),1628-1631 (Mar. 2002) CODEN: JAPND

Tanaka, Kenji ; Ohkubo, Toshifumi ; **Oumi, Manabu** ; **Mitsuoka, Yasuyuki** ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Recently, near-field surface **recording** based on **near - field optical** principles has been vigorously studied for higher data storage density. In **near - field optics** which utilizes an aperture, in addition to the high spatial resolution property, there is another...

Descriptors: optical storage ; finite difference time-domain analysis ; modelling ; data recording ; **near - field scanning** optical microscopy ; light polarisation ; surface phenomena ; magneto-optical recording

22/3,K/4 (Item 2 from file: 62)
DIALOG(R)File 62:SPIN(R)

00957602

Numerical Simulation on Read-Out Characteristics of the Planar Aperture-Mounted Head with a Minute Scatterer

Tanaka, Kenji ; Ohkubo, Toshifumi ; **Oumi, Manabu** ; **Mitsuoka, Yasuyuki** ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Graduate School of Frontier Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan ; Seiko Instruments Inc., 563 TakatsukaShinden, Matsudo-shi, Chiba 270-2222, Japan

40(3B),1542-1547 (30 Mar. 2001) CODEN: JAPND

Tanaka, Kenji ; Ohkubo, Toshifumi ; **Oumi, Manabu** ; **Mitsuoka, Yasuyuki** ; Nakajima, Kunio ; Hosaka, Hiroshi ; Itao, Kiyoshi

Recently, various researches on optical **recording** based on **near - field optical** principles have been conducted for higher data storage density. However, there is a problem of the trade-off between signal output and spatial resolution, especially when an aperture-type **near - field**

optical head is utilized for high speed data-readout. In order to solve this problem, we propose a novel **near - field optical** head, the planar aperture-mounted head with a minute scatterer, and analyze its read-out...

22/3,K/5 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

05208042 JICST ACCESSION NUMBER: 02A0498496 FILE SEGMENT: JICST-E
Optical Memories. Simulation of Simultaneous Tracking/Data Signal Detection Using Novel Aperture-Mounted Surface Recording Head.
TANAKA K (1); OHKUBO T (1); HOSAKA H (1); ITAO K (1); **OUMI M** (2); **MITSUOKA Y** (2); NAKAJIMA K (2)
(1) Univ. Tokyo, Tokyo, Jpn; (2) **Seiko Instruments Inc., Chiba, Jpn**
Jpn J Appl Phys Part 1, 2002, VOL.41,NO.3B, PAGE.1628-1631, FIG.5, REF.10
JOURNAL NUMBER: G0520BAE ISSN NO: 0021-4922
UNIVERSAL DECIMAL CLASSIFICATION: 621.3:681.327.1 535:681.7
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

; **OUMI M** (2); **MITSUOKA Y** (2); NAKAJIMA K (2)
ABSTRACT: Recently, near-field surface **recording** based on **near - field optical** principles has been vigorously studied for higher data storage density. In **near - field optics** which utilizes an aperture, in addition to the high spatial resolution property, there is another...
?

35/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

01588231 INSPEC Abstract Number: A80099823, B80049098
Title: Calibration technique for refracted near-field scanning of optical fibers
Author(s): Young, M.
Author Affiliation: Electromagnetic Technol. Div., US NBS, Boulder, CO, USA
Journal: Applied Optics vol.19, no.15 p.2479-80
Publication Date: 1 Aug. 1980 Country of Publication: USA
CODEN: APOPAI ISSN: 0003-6935
Language: English
Subfile: A B

Title: Calibration technique for refracted near-field scanning of optical fibers
Abstract: The refracted **near - field scanning** method for determining the refractive-index profile of an **optical waveguide** was first suggested by Stewart and reduced to practice by him and White (1977, 1979 ...

... 40*, 0.55-NA microscope objective to illuminate the fiber, and a specially constructed, high- **aperture** condensing **lens** to focus the emergent cone of rays onto a uniform, large-area silicon detector. Data are taken on an x-y **recorder** ; the linearity of the electronics has been verified with a set of neutral-density filters...
...Descriptors: **optical fibres** ;
...Identifiers: **optical fibre** refracted near field scanning...

...high **aperture** condensing **lens** ;

35/3,K/2 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

2157649 NTIS Accession Number: DE99707628/XAB
FY 1997 research and development of fusion domains. Part 3. Studies on next generation optical substrate technologies
Corp. Source Codes: 888888888
Report No.: ETDE/JP-99707628
31 Mar 1998 63p
Languages: Japanese
Journal Announcement: USGRDR0012; NSA0013
Japanese.
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NTIS Prices: PC A05/MF A01

With an objective of realizing super large capacity **recording** technologies largely exceeding the current limits of optical **recording** and magnetic **recording** , studies were conducted on application of **near - field optics** . In the study on **recording** by using **near - field light** , it was verified that a mark with approximately the same size as an **aperture** diameter can be formed on a phase change **recording** film when a

fiber probe with an **aperture** diameter of about 200 nm is used. However, it was found that the **recording** using this system takes excessive amount of time. When laser light collected on an objective **lens** was irradiated pulse-wise, a mark with a minimum width of about 20 nm was observed with high contrast. This will mean that a **record** with **recording** density of one terabit/in (sup 2) can be read out. Other studies performed include...

... surface shape on near-field read- out, simulation, mechanism of crystallization in a phase change **recording** film, **recording** and playback with ultra-high resolution by using a conformable near- field **aperture** , fabrication of a flat **aperture** type **near - field light** probe array, and the evaluation thereon. 22 refs., 27 figs.
Descriptors: Optical Systems; *Optical properties; Recording systems; Probes; **Optical fibers** ; Phase transformations; Laser Radiation; **Lenses** ; Pulse techniques; Optics

35/3,K/3 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04297497 E.I. No: EIP95122946396
Title: Optical data storage using a solid immersion lens
Author: Terris, Bruce D.; Mamin, H. Jonathan; Rugar, Daniel
Corporate Source: Almaden Research Cent, San Jose, CA, USA
Source: Optoelectronics - Devices and Technologies v 10 n 3 Sep 1995. p 303-310
Publication Year: 1995
CODEN: ODTEEG ISSN: 0912-5434
Language: English

Title: Optical data storage using a solid immersion lens
...Abstract: progress toward achieving high density and high data rate optical recording using a recently developed **near - field optical** technique based on the Solid Immersion **Lens** (SIL). The SIL is a truncated glass sphere which serves to increase the numerical **aperture** of the optical system by n**2, where n is the index of refraction of the **lens** material. Using 780 nm **light** , a 317 nm **focused** spot size has been achieved by placing the SIL in contact with a sample. By...
Descriptors: Optical data storage; Optical recording; **Lenses** ; Optical systems; Refractive index; Magnetic storage; Magnetooptical devices; Frequencies; Electromagnetic wave diffraction; **Optical fibers**
Identifiers: Solid immersion **lens** ; High density; Data rate; Near-field optics; Numerical **aperture**

35/3,K/4 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02973668 JICST ACCESSION NUMBER: 96A0430190 FILE SEGMENT: JICST-E
Ultra High Density Optical Memory. Trend of Technology.
GOTO KEN'YA (1)
(1) Tokai Univ. School of High-Technol. Human Welfare
Erekutoronikusu, 1996, VOL.41,NO.5, PAGE.87-91, FIG.3, REF.19
JOURNAL NUMBER: F0037AAL ISSN NO: 0421-3513 CODEN: ERKTA
UNIVERSAL DECIMAL CLASSIFICATION: 621.3:681.327.1 681.327
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary

MEDIA TYPE: Printed Publication

...ABSTRACT: high recording density is a method involving optical technology by aplying the principle of the **near field optics** . This paper explains the situation of the research progress and the technical trend. The **near field optical** technology is one of the methods to avoid the phenomenon that light expands by diffraction. The **near field optical** technology includes a method using the evanescent waves to avoid the spot size limination at...
...DESCRIPTORS: objective **lens** ; ...

...numerical **aperture** ; ...

... **optical fiber** ;
...BROADER DESCRIPTORS: **lens** (optics...

... **lens** system

38/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7414169 INSPEC Abstract Number: A2002-23-4280T-003, B2002-11-4120-015, C2002-11-5320K-010
Title: Optical module for a near-field hybrid recording system using the diffractive optical element (DOE)
Author(s): Jian-Shian Lin; Chi-Feng Chen; Hsi-Fu Shih; Ming-Wen Chang
Author Affiliation: Mater. Ind. Res. Lab., Ind. Technol. Res. Inst., Hsinchu, Taiwan
Journal: International Journal of Nonlinear Sciences and Numerical Simulation Conference Title: Int. J. Nonlinear Sci. Numer. Simul. (UK) vol.3, no.3-4 p.627-30
Publisher: Freund Publishing House,
Publication Date: 2002 Country of Publication: UK
CODEN: IJNSF5 ISSN: 1565-1339
SICI: 1565-1339(2002)3:3/4L.627:OMNF;1-J
Material Identity Number: D166-2002-003
Conference Title: International Conference on Micro and Nano Systems 2002 (ICMNS 2002)
Conference Date: 11-14 Aug. 2002 Conference Location: Kunming, China
Language: English
Subfile: A B C

Abstract: This module combines the techniques of MEMS, **near - field optics** , flying head, and multiple beam. It organizes the optical component and waveguide into a substrate. It integrates the multiple beam optical module for nearfield high density **recording** , used the optics characteristic of the diffractive optical element, (DOE), generate multiple beams equally on the module, and reduce the spot size by using the **near field optics** . Simultaneously, quite a bit of information is **recorded** on the tracks of high density optical discs.
...Descriptors: **optical waveguides**
...Identifiers: solid immersion **lens** ;

38/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6460361 INSPEC Abstract Number: A2000-03-7847-008
Title: Ultrafast pump-probe spectroscopy with 355-nm lateral resolution at T=8 K
Author(s): Giessen, H.; Vollmer, M.; Stolz, W.; Ruhle, W.W.
Author Affiliation: Fachbereich Phys., Philipps-Univ., Marburg, Germany
Conference Title: Technical Digest. Summaries of papers presented at the Quantum Electronics and Laser Science Conference. Postconference Edition (Cat. No. 99CH37012) p.58-9
Publisher: Opt. Soc. America, Wasington, DC, USA
Publication Date: 1999 Country of Publication: USA 283 pp.
ISBN: 0 7803 5656 X Material Identity Number: XX-1999-02113
Conference Title: Technical Digest. Summaries of papers presented at the Quantum Electronics and Laser Science Conference
Conference Sponsor: APS/Div. Laser Sci.; IEE/Lasers & Electro-Opt. Soc.; OSA- Opt. Soc. America
Conference Date: 23-28 May 1999 Conference Location: Baltimore, MD, USA
Language: English

Subfile: A
Copyright 2000, IEE
...Abstract: from diffusive carrier transport behaviour and coherent lateral excitation transfer triggered the use of scanning **near - field optical** microscopy (SNOM) techniques for such investigations. However, severe technical difficulties, e.g., due to the low light throughput of **optical fibers** , make nonlinear experiments with a few hundred nanometers spatial resolution including broad spectral information very...

... long-working distance high-NA (0.4) microscope objective and a hemispherical GaP solid immersion **lens** with a refractive index of 3.16. The spot diameter is reduced by the refractive...

... pulse duration at the sample was 130 fs and the whole spectral information could be **recorded** with a standard pump-probe setup employing a spectrometer and an optical spectrum analyzer.
...Identifiers: hemispherical GaP solid immersion **lens** ;

38/3,K/3 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06255320 E.I. No: EIP03017300462
Title: Application of planar waveguide for near-field recording with multibeam method
Author: Chen, Chi-Feng; Lin, Jian-Shian; Shih, Hsi-Fu
Corporate Source: MEMS Dep. Mechanical Industry Research Lab. Industrial Technology Research Inst., Cutung, Hsinchu 310, Taiwan
Conference Title: Optical Fiber and Planar Waveguide Technology II
Conference Location: Shanghai, China Conference Date: 20021016-20021018
E.I. Conference No.: 60488
Source: Proceedings of SPIE - The International Society for Optical Engineering v 4904 2002. p 261-269
Publication Year: 2002
CODEN: PSISDG ISSN: 0277-786X
Language: English

Abstract: This module combined the techniques of MEMS, **near - field optics** , fly head, and multiple beam. It organized the optical component and waveguide into a substrate. It integrated the multiple beam optical module for near-field high density **recording** , used the optics characteristic of the diffractive optical element, (DOE), generate multiple beams equally on the module, and reduce the spot size by using the **near field optics** . Simultaneously, quite a bit of information is **recorded** on the tracks of high density optical discs. 8 Refs.
Descriptors: **Optical waveguides** ; **Optical** recording; Microelectromechanical devices; Diffraction gratings; Optical disk storage; Optical instrument **lenses**
?

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File 348:EUROPEAN PATENTS 1978-2003/Dec W02
         (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20031225,UT=20031218
         (c) 2003 WIPO/Univentio
? ds

Set     Items   Description
S1       1027   NEAR()FIELD()(LIGHT? OR OPTIC? OR IMAGE? ? OR IMAGING? OR -
            SCAN? ? OR SCANNING) OR NFR
S2      65180   OPTIC?(N)(FIBER? ? OR FIBRE? ? OR WAVEGUID? OR WAVE()GUIDE-
            ?) OR (CORE AND CLAD)
S3       1664   (MINUTE OR MINIATURE OR MICROSCOPIC OR EXTREMELY()(SMALL OR
             LITTLE))(3N)(APERTURE OR HOLE? ? OR OPENING OR PINHOLE)
S4      58447   (CONCAVE OR FOCUS? OR CONCENTRAT? OR CENTRALI? OR CONCENTE-
            R? OR CONCENTRING OR CONCENTRE?)(10N)(LIGHT OR OPTIC? OR LASE-
            R? ?)
S5      82770   MICROLENS??? OR LENS??? OR MICRO()LENS???
S6     327989   REFLECT? OR MIRROR? OR DEFLECT?
S7       9031   INTERNAL?(3N)(REFLECT? OR MIRROR? OR DEFLECT?)
S8        161   (RECORD? OR REPRODUCT? OR REPLICA? OR DUPLICAT?)(S)S1
S9          0   S1 AND IC=(G02B-006/26 AND G02B-006/42 AND G11B-007/00 AND
             G11B-007/135)
S10        72   S1 AND IC=(G02B-006/26 OR G02B-006/42 OR G11B-007/00 OR G1-
             1B-007/135)
S11        54   S10 AND (S4 OR S5)
S12        30   S11 AND S2
S13        30   IDPAT (sorted in duplicate/non-duplicate order)
S14        30   IDPAT (primary/non-duplicate records only)
S15        30   S14 AND S6
S16        31   S10(S)(S4 OR S5)
S17        12   S16(S)S2
S18        68   S8(S)(S4 OR S5)
S19        23   S18(S)S6
S20         0   S18(S)S7
S21        12   S19(S)(S2 OR S3)
S22        12   IDPAT S21 (sorted in duplicate/non-duplicate order)
S23         6   S22 NOT S17
```

17/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01474840
Near-field light-generating element, near-field optical recording device, and near-field optical microscope
Lichterzeugendes Nahfeld-Element, nahfeld-optische Aufzeichnungsvorrichtung und optisches Nahfeldmikroskop
Element generateur de lumiere en champ proche, appareil d'enregistrement optique de champ proche et microscope de balayage optique de champ proche
PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP), (Applicant designated States: all)
INVENTOR:
Oumi, Manabu, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kasama, Nobuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kato, Kenji, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Shinohara, Yoko, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Niwa, Takashi, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Mitsuoka, Yasuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50505), Miller Sturt Kenyon, 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1251383 A2 021023 (Basic)
APPLICATION (CC, No, Date): EP 2002252636 020415;
PRIORITY (CC, No, Date): JP 2001118543 010417; JP 200292276 020318
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G02B-021/00; G12B-021/06; G11B-007/00
ABSTRACT WORD COUNT: 84
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200243	576
SPEC A	(English)	200243	8620
Total word count - document A			9196
Total word count - document B			0
Total word count - documents A + B			9196

...SPECIFICATION 101 to the near-field optical head 104, an optical waveguide 103 consisting of a **core** and a **clad** fixed to a **lens** 102 and the suspension arm 107 is used. A polarization-maintaining waveguide having a rectangular **core** cross section is used as the **optical waveguide** 103 to preserve the direction of polarization possessed by the light fluxes from the laser...is provided with the minute aperture 206.

The microlens 205 collects light fluxes from the **optical waveguide** 103 into the minute aperture 206. A mirror substrate 210 having a mirror surface 203 and the **optical waveguide** 103 are fixed on top of the aperture substrate 111. Al (not shown) having a thickness of 200 nm is deposited on the mirror surface 203. The **optical waveguide** 103 consists of a **core** 201 and a **clad** 202. In this embodiment, a glass substrate that transmits light of the wavelength of the...

...may be made of a material that transmits light of wavelength used only for the **microlens** 205 and a portion where a light flux transmits, by using a silicon substrate or the like. In addition, an ordinary spherical or aspherical **lens** , refractive index distribution **lens** , Fresnel **lens** , or the like can be used as the **microlens** 205. Especially, where a Fresnel **lens** is used, a planar **lens** can be fabricated. If a **lens** having a large diameter is fabricated, the thickness of the **near - field optical** head can be reduced. Fresnel **lenses** can be mass-produced by using photolithography technology.

The present invention is characterized by the...of optical information, a lens 602 placed in front of the light source 601, an **optical fiber** 603 for propagating light collected by the **lens** 602 to the **near - field optical** probe 1000, a prism 611 placed below a specimen 610 and reflecting propagating light produced at the front end of the tip, a **lens** 614 for collecting the propagating light reflected by the prism 611, and a light detection portion 609 for receiving the collected, propagating light. The **optical fiber** 603 is a polarization-maintaining fiber for preserving the direction of polarization of the incident...

...emitted from the light source 601 is condensed by the lens 602 and reaches the **optical fiber** 603. The light propagating through the opticalfiber 603 is admitted into the tip 701 of the **near - field optical** probe 1000 via the lever 702 while the polarization is maintained. The light is directed...

...optical information about the specimen 610 reflected from the prism 611 is collected by the **lens** 614 and introduced into the light detection portion 609. The signal from the light detection...

...the light emitted from the light source 601 directly onto the tip 701 by a **lens** and admitting the light without using the **optical fiber** 603. In the description with reference to Fig. 16, an illumination mode has been described in which light is admitted into the **near - field optical** probe 1000 and **near - field light** is directed to the specimen from the minute aperture 705. The **near - field optical** probe 1000 can also be used in a collection mode in which **near - field light** produced at the surface of the specimen 610 is detected by the minute aperture 705. In addition, the **near - field optical** probe 1000 can be used in an observational method in which the illumination mode and...

17/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01445013
Information recording/reproduction apparatus
Informationsaufzeichnungs- / -wiedergabegerat
Appareil d'enregistrement / de reproduction d'informations
PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku,

Chiba-shi, Chiba, (JP), (Applicant designated States: all)
INVENTOR:
Kasama, Nobuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Shinohara, Yoko, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Mitsuoka, Yasuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Oumi, Manabu, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kato, Kenji, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Niwa, Takashi, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
LEGAL REPRESENTATIVE:
Sorenti, Gino et al (50293), Miller Sturt Kenyon, 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1233410 A2 020821 (Basic)
APPLICATION (CC, No, Date): EP 2002251022 020214;
PRIORITY (CC, No, Date): JP 200140589 010216
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135
ABSTRACT WORD COUNT: 109
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200234	324
SPEC A	(English)	200234	8503
Total word count - document A			8827
Total word count - document B			0
Total word count - documents A + B			8827

...ABSTRACT A2
An information recording/reproduction apparatus including a **near field optical** head (104) having a minute aperture (206) formed thereon, a substantially rod-like **optical waveguide** (103) having a **core** (201) and a **clad** (202), a reflection surface (203) formed at one of end faces of the **optical waveguide** , for irradiating light to the **near field optical** head, a light reception portion and a recording medium, and utilizing **near field light** , a **lens** function (205) is formed on a surface of the **near field optical** head different from the surface of the minute aperture, and a **core** end face is formed at an intermediate part spaced apart from the reflection surface.

...SPECIFICATION aperture becomes low, too.
Therefore, a lens is interposed between the end face of the **optical waveguide** and the minute apparatus so as to condense the luminous flux irradiated from the end face of the **optical waveguide** to a portion in the proximity of the minute aperture, to increase the intensity of **near field light** occurring in the proximity of the minute aperture and to improve light utilization efficiency. When a **lens** having a high NA is used, a condensation spot size can be made small and **optical** energy can be **concentrated** on a finer region. When the minute aperture is disposed

incident into the **micro - lens** formed in the **near field optical** head can be increased much more than the diameter in Embodiment 1. Then, the NA of the luminous flux incident from the **micro - lens** into the minute aperture becomes further greater, and the spot size of the luminous flux...

...energy density condensed to the minute aperture can be further increased, and the strength of **near field light** generated in the proximity of the minute aperture can be further increased.

Such a shape...information recording/reproduction apparatus has the mechanism in which the distal end portion of the **core** of the **optical waveguide** has the lens function of the convex or concave shape. Since this lens function is combined with the lens formed in the **near field optical** head, the third apparatus can much more condense the luminous flux having a high energy density to the minute aperture of the **near field optical** head, can further increase the intensity of **near field light** generated in the proximity of the minute aperture, and can drastically improve light utilization efficiency...

...fourth information recording/reproduction apparatus has the construction in which the reflection surface of the **optical waveguide** has the **concave** shape that reflects the luminous flux and much more enlarges its expansion angle, and can...

...more the luminous flux having a high energy density to the minute aperture of the **near field** optical head. Therefore, since the intensity of **near field light** generated in the proximity of the minute aperture can be further increased, light utilization efficiency...

...CLAIMS said near field optical head different from the surface of said minute aperture, and a **core** end face is formed at an intermediate part spaced apart from said reflection surface.

2...

17/3,K/3 (Item 3 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01364947

Method for forming aperture, near field optical head and method for fabricating the same and information recording/reading apparatus

Verfahren zur Herstellung einer Aperturblende, optischer Nahfeldkopf und Verfahren zu dessen Herstellung, Vorrichtung zum Aufnehmen und Wiedergeben von Informationen

Procede de production d'une ouverture, tete optique a champ proche et procede de production associe, appareil d'enregistrement/de reproduction des informations

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PATENT (CC, No, Kind, Date): EP 1162605 A2 011212 (Basic)
EP 1162605 A3 030402
APPLICATION (CC, No, Date): EP 2001304917 010605;
PRIORITY (CC, No, Date): JP 2000173852 000609; JP 2000371828 001206; JP 2000379266 001213; JP 2001126415 010424
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/00
ABSTRACT WORD COUNT: 166
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200150	754
SPEC A	(English)	200150	12318
Total word count - document A			13072
Total word count - document B			0
Total word count - documents A + B			13072

...SPECIFICATION from a laser 1101 to the near field optical head 1106, a lens 1102, an **optical fiber** 1103 fixed to the suspension arm 1109, a **lens** 1104 and a mirror 1105 are used.
The optical fiber 1103 is used here but...

...1101 is entered to the near field optical head 1106 by the lens 1102, the **optical fiber** 1103, the **lens** 1104 and the mirror 1105, which form a light guiding structure. Then, it is guided to the aperture of the **near field optical** head 1106 to generate a **near field light** near the aperture. The scattered light generated from the consequence of the interaction of this **near field light** with the recording medium 1107 is received by the light receiving head 1108 fixed to...

...of information. Furthermore, recording information on the recording medium 1107 is realized in which the **near field optical** head 1106 having the aperture is moved to a desired position on the recording medium as the recording medium 1107 is brought close to the aperture and the **near field light** is irradiated onto the recording medium 1107 from the aperture for writing operation.
In the...

17/3,K/4 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01344148

Information recording and reproducing apparatus
Informationsaufzeichnungs- und -wiedergabevorrichtung
Appareil d'enregistrement et de reproduction d'information

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PATENT (CC, No, Kind, Date): EP 1148477 A2 011024 (Basic)
EP 1148477 A3 021211
APPLICATION (CC, No, Date): EP 2001303351 010410;
PRIORITY (CC, No, Date): JP 2000116580 000418
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-007/22
ABSTRACT WORD COUNT: 209
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200143	409
SPEC A	(English)	200143	9508
Total word count - document A			9917
Total word count - document B			0
Total word count - documents A + B			9917

...SPECIFICATION the above-described effect, the optical propagating portion is constituted by the lens and the **optical waveguide** for propagating the light flux to the optical connecting portion and accordingly, the optical propagating...

...out. Further, it is possible to overlap the record media and arrange suspension arms and **near - field light** heads in correspondence with the respective record media and large capacity formation can be realized ...to a vicinity of the flexure 110 is constituted by a lens 102 and an **optical fiber** 103 fixed to the suspension arm 109. An optical connecting portion for optically connecting the light propagating portion and the **near - field light** head 106 having the optical coupling portion is constituted by a **lens** 104 and a mirror 105.

Here, although the optical fiber 103 is used, an optical...the prism 302 is fixed to the flexure 110.

Diverging light flux emitted from the **optical fiber** 103 is converted into parallel light flux by the lens 104 and a direction of...

...is reflected by the bottom face of the prism. At this occasion, there is

constituted by the lens and the **optical waveguide** for propagating the light flux to the optical connecting portion and accordingly, the optical propagating...

...out. Further, it is possible to overlap the record media and arrange suspension arms and **near - field light** heads in correspondence with the respective record media and large capacity formation can be realized ...

17/3,K/5 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01270944
NEAR FIELD OPTICAL HEAD AND METHOD FOR MANUFACTURING THE SAME
OPTISCHER NAHFELDKOPF UND VERFAHREN ZU DESSEN HERSTELLUNG
TETE OPTIQUE A CHAMP PROCHE ET PROCEDE DE FABRICATION DE CELLE-CI
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PATENT (CC, No, Kind, Date): EP 1122722 A1 010808 (Basic)
WO 200115151 010301
APPLICATION (CC, No, Date): EP 2000953551 000821; WO 2000JP5605 000821
PRIORITY (CC, No, Date): JP 99238062 990825; JP 99336062 991126
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12; G11B-007/135; G11B-021/21; G01N-013/14; G12B-021/06; G02B-006/26
ABSTRACT WORD COUNT: 175
NOTE:
Figure number on first page: 001A001B

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200132	997
SPEC A	(English)	200132	12254
Total word count - document A			13251
Total word count - document B			0
Total word count - documents A + B			13251

...SPECIFICATION method characterized in that the method includes a machining process of the tip of the **optical fiber** in a lens shape for **concentrating** the emitted **light** from the **optical fiber** onto the minute structure.

Therefore, the spot diameter of the emitted light from the optical... lies in the geometry of the mirror 2002. The mirror 2002 is consisted of a **concave** mirror. The light emitted from the **optical fiber** 2803 by the mirror 2002 is changed in its propagating direction toward the minute aperture...

...at the same time is concentrated on the minute aperture 2006. Therefore, according to the **near - field optical** head 2000, the **near - field light** emitted from the minute aperture 2006 has a greater intensity than that of the **near - field optical** head shown in the first embodiment.

(Third Embodiment)

Fig. 6 is a construction view showing...

...optical fiber 3803 of the present invention is processed in a spherical shape.

Accordingly, the **light** emitted from the tip of the **optical fiber** propagates while **concentrating** itself toward the minute aperture 3006. Therefore, as for the **near - field optical** head 3000, the **near - field light** generated from the minute aperture 3006 has a greater intensity than the **near - field optical** head shown in the first embodiment.

(Fourth Embodiment)

Fig. 7 is a construction view showing...

...CLAIMS process of a reflection coating on the diagonally shaped surface.

21. A method for manufacturing **near - field optical** head of any of claims 16 to 17 or 19 to 20, wherein the method includes a machining process of the tip of the **optical fiber** in a **lens** shape to condense the emitted light from the **optical fiber** onto the minute structure.

22. A near-field optical head comprising:

a light propagating medium...

17/3,K/6 (Item 6 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01264898

Recording medium, recording apparatus and recording method

Aufzeichnungsmedium -vorrichtung und -verfahren

Support , appareil et methode d'enregistrement

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PATENT (CC, No, Kind, Date): EP 1091355 A2 010411 (Basic)
EP 1091355 A3 030507
APPLICATION (CC, No, Date): EP 2000308015 000914;
PRIORITY (CC, No, Date): JP 99277456 990929
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-009/04; G11B-007/00; G11B-009/08; G11B-011/08
ABSTRACT WORD COUNT: 109
NOTE:
Figure number on first page: 1

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FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200115	965
SPEC A	(English)	200115	12732
Total word count - document A			13697
Total word count - document B			0
Total word count - documents A + B			13697

...SPECIFICATION medium 10 and the recording head 22.
As described above, the opening 27 of the **optical fiber** 24 has a very small size in this embodiment, and the recording medium 10 is irradiated with a **near field light** through the opening 27. The **near field light** is the light that is localized on only the surface of a substance when the substance is irradiated with the light. In other words, the **near field light** represents the electric line of force between induced dipoles adjacent to each other in the...

...a substance when the substance is irradiated with light. In the case of using the **near field light** , it is possible to make the light irradiated spot very small. The method of generating the **near field light** , which is not particularly limited in the present invention, includes, for example, the method of...

...very small opening as in the embodiment described above, the method using a solid immersion **lens** , the method utilizing a phase change material, in which the refractive index is non-linearly...

17/3,K/7 (Item 7 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01109076
NEAR-FIELD OPTICAL HEAD
OPTISCHE NAHFELDKOPF
TETE OPTIQUE EN CHAMP PROCHE
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 996122 A1 000426 (Basic)
WO 9959149 991118
APPLICATION (CC, No, Date): EP 99918343 990507; WO 99JP2393 990507
PRIORITY (CC, No, Date): JP 98127569 980511; JP 9984291 990326
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G11B-007/135
ABSTRACT WORD COUNT: 134
NOTE:
Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200017	394
SPEC A	(English)	200017	5441
Total word count - document A			5835
Total word count - document B			0
Total word count - documents A + B			5835

...SPECIFICATION Embodiment 1)
Fig. 7 shows a structure of an information recording/reproducing apparatus using a **near - field optical** head according to Embodiment 1 of the present invention. This information reproducing apparatus 20 is plates 22 and 23 for controlling a polarization of a laser light, an **optical waveguide** 24 for transmitting through the laser light, an optical head 1 having a microscopic aperture, an **optical** head drive actuator 30, a **lens** 29 for **focusing** a scattering **light** caused due to interaction between a **near - field light** 7 and a recording medium 33, a light detecting element 25 for receiving a scattering...

...by the wavelength plates 22, 23, and introduced to the optical head 1 through the **optical waveguide** 24.
As will be stated later in Fig. 1, a near-field light 7 caused...

17/3,K/8 (Item 8 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01095778
RECORDING APPARATUS
AUFZEICHNUNGSGERAT
APPAREIL D'ENREGISTREMENT
PATENT ASSIGNEE:
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PATENT (CC, No, Kind, Date): EP 984438 A1 000308 (Basic)
WO 9949459 990930
APPLICATION (CC, No, Date): EP 99942599 990312; WO 99JP1212 990312
PRIORITY (CC, No, Date): JP 9872786 980320; JP 98291142 981013; JP 98302266 981023; JP 9916202 990125
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G11B-007/09; G11B-007/135; G01N-037/00
ABSTRACT WORD COUNT: 135
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200010	2057
SPEC A	(English)	200010	16879
Total word count - document A			18936
Total word count - document B			0
Total word count - documents A + B			18936

...SPECIFICATION Z-axis control mechanism 14.
When the microscopic aperture 12 is inserted in the localized **near - field light** region on the recording medium 10, the **near - field light** is scattered by the microscopic aperture 12. The scattered light (propagation **light**) is introduced through the microscopic aperture 12 to a **focusing optical** system 15 placed above the microscopic aperture 12. Thus, detection of **near - field light** is achieved in a collection mode as stated before. The propagation **light** introduced to the **focusing optical** system 15 is introduced through a mirror 16 to a light detecting mechanism 17 and converted into an electric signal to be processed into a reproduced signal. Here, the **focusing optical** system 15 is, for example, a **lens optical** system, **optical fiber optical** system or light guide or the like. Also, the light detecting mechanism 17 is, for...being absorbed by the silicon substrate. Input light 232 introduced through a lens system or **optical waveguide** (not shown) produces **near - field light** 205 from a microscopic aperture 235 formed at a tip of the probe. The scattering...

...234 is detected by the light receiving element 233. Because the z direction dependency of **near - field light** is theoretically the same as that of Embodiment 3, the probe can be controlled in...

17/3,K/9 (Item 9 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01085672

NEAR FIELD OPTICAL MEMORY HEAD

OPTISCHER NAHFELDKOPF FUR SPEICHER

TETE DE MEMOIRE OPTIQUE DANS LE CHAMP PROCHE

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PATENT (CC, No, Kind, Date): EP 978829 A1 000209 (Basic)
WO 9944198 990902
APPLICATION (CC, No, Date): EP 99905268 990222; WO 99JP781 990222
PRIORITY (CC, No, Date): JP 9843715 980225; JP 9843718 980225; JP 994548 990111; JP 996802 990113
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G11B-007/135
ABSTRACT WORD COUNT: 126
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200006	1307
SPEC A	(English)	200006	10938
Total word count - document A			12245
Total word count - document B			0
Total word count - documents A + B			12245

...SPECIFICATION near-field light and a fine structure of a surface of the sample to an **optical** detector by using a **focusing** system added further.

Further, **near - field light** is not only utilized for a microscope but is applicable to high density optical memory record in which **near - field light** having a high energy density is generated at a very small aperture of an **optical fiber** probe by introducing light having a comparatively large intensity to a sample via an **optical fiber** probe and a structure or physical properties of a surface of the sample are locally changed by the **near - field light** .

As a probe used in a near-field optical microscope, for example, as disclosed in...

...suitable for reproduction and recording of an optical memory utilizing near-field light.

However, the **optical fiber** probe is provided with the sharpened front end and accordingly, the mechanical strength is not...

...is not suitable for mass production and array formation. Further, scattered light provided by disturbing **near - field light** is very weak and therefore, when the scattered light is detected by passing through an **optical fiber** , there is needed a devise for providing a sufficient light amount at a detecting unit. Further, when a sufficient magnitude of **near - field light** is generated by passing through an **optical fiber** , there is needed a devise for 1focusing light to a very small aperture portion of the **optical fiber** .

Further, according to the cantilever type optical probe, reception of scattered light from the light...

17/3,K/10 (Item 10 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01002278

OPTICAL RECORDING DEVICE AND OPTICAL RECORDING MEDIUM

OPTISCHES AUFZEICHNUNGSGERAT UND OPTISCHES AUFZEICHNUNGSMEDIUM

DISPOSITIF D'ENREGISTREMENT OPTIQUE ET SUPPORT D'ENREGISTREMENT OPTIQUE

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Watkin, Timothy Lawrence Harvey et al (88631), Mewburn Ellis, York House, 23 Kingsway, London, WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 977192 A1 000202 (Basic)
WO 9847138 981022

APPLICATION (CC, No, Date): EP 98912778 980413; WO 98JP1683 980413

PRIORITY (CC, No, Date): JP 9795856 970414; JP 9795858 970414

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G11B-007/135; G11B-007/24

ABSTRACT WORD COUNT: 167

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200005	1326
SPEC A	(English)	200005	7734
Total word count - document A			9060
Total word count - document B			0
Total word count - documents A + B			9060

...SPECIFICATION objective lens having a high numerical aperture such as a solid immersion lens or stigmatic **focusing** solid immersion lens or by an **optical waveguide** having a minute aperture kept in contact with or closely spaced from a recording medium...

...between the surface of the optical recording medium and the light emitting face of the **lens** or **optical waveguide** is very small (not larger than 1/2 of the light wavelength, typically less than...

17/3,K/11 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00801865 **Image available**
NEAR-FIELD CRYSTAL OPTICAL MEMORY
MEMOIRE OPTIQUE A QUARTZ DE CHAMP PROCHE
Patent Applicant/Assignee:
GEORGETOWN UNIVERSITY, 3900 Reservoir Road, N.W., Washington, DC 20007, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
MOSCOVITCH Marko, 11700 Devilwood Court, Potomac, MD 20854, US, US (Residence), US (Nationality), (Designated only for: US)
Legal Representative:
BULSON Don W (agent), Renner Otto Boisselle & Sklar LLP, 19th Floor, 1621 Euclid Avenue, Cleveland, OH 44115, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200135398 A1 20010517 (WO 0135398)
Application: WO 2000US30802 20001110 (PCT/WO US0030802)
Priority Application: US 99164574 19991110
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 4498

Fulltext Availability:
Detailed Description

Detailed Description
... near field system uses laser light to read and write data. However, rather than using **lens** to **focus** the **laser** beam on the recording medium, the **light** is directed into a probe made frorn aluminum-coated **optical fiber** , tapered to a tiny point at the end as illustrated in FIG. 2. In FIG. 2, the tapered tip 30 of the **optical fiber** is shown in shown in relation to the recording medium 40.

The diameter of the...

17/3,K/12 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00373324 **Image available**
HIGH RESOLUTION FIBER OPTIC PROBE FOR NEAR FIELD OPTICAL MICROSCOPY
SONDE HAUTE RESOLUTION A FIBRE OPTIQUE POUR MISCROSCOPIE OPTIQUE A CHAMP PROCHE

Patent Applicant/Assignee:
ACCUPHOTONICS INC,
Inventor(s):
ISLAM Mohammed N,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9714067 A1 19970417
Application: WO 96US16080 19961011 (PCT/WO US9616080)
Priority Application: US 95542437 19951012
Designated States: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 11247

Fulltext Availability:
Detailed Description

Detailed Description
... extremely high
resolution;
Figure 7 is a schematic diagram illustrating one
configuration for fabricating the **fiber optic** probe;
Figure 8 is a series of views illustrating an alternate
etching process, the views illustrating the **fiber optic** probe tip
undergoing etching at different successive time intervals;
Figure 9 is a detailed view...

...Preferred Embodiment
Referring to Figure 1. the high efficiency optical probe is
illustrated in a **near field optical** microscopy application, The
optical probe 10 is formed at the distal end of a **fiber optic** cable
12
which is in turn coupled at its proximal end to a light source 14, The
optical probe is a **light** -emitting probe which projects a highly
concentrated , extremely **focused** near field illumination onto a
specimen
16, which may be mechanically positioned on a suitable...

...from the specimen or light transmitted through
the specimen, The objective 18 may be a **lens** coupled to a
photomultiplier 20, which may in turn be electronically connected to a
monitor...
?

23/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01346862
Near-field optical head
Optischer Nahfeldkopf
Tete optique a champ proche
PATENT ASSIGNEE:
Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP), (Applicant designated States: all)
INVENTOR:
Shinohara, Yoko, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Mitsuoka, Yasayuji, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Oumi, Manabu, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kasama, Nobuyuki, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Maeda, Hidetaka, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Kato, Kenji, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
Niwa, Takashi, c/o Seiko Instruments Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)
LEGAL REPRESENTATIVE:
Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)
PATENT (CC, No, Kind, Date): EP 1150286 A2 011031 (Basic)
EP 1150286 A3 020918
APPLICATION (CC, No, Date): EP 2001303370 010410;
PRIORITY (CC, No, Date): JP 2000119753 000420
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-007/12
ABSTRACT WORD COUNT: 143
NOTE:
Figure number on first page: 4

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200144	698
SPEC A	(English)	200144	7515
Total word count - document A			8213
Total word count - document B			0
Total word count - documents A + B			8213

...ABSTRACT A2
A **near - field optical** head capable of rapid **recording** and/or reproducing of the information is provided. The **near - field optical** head condenses the light from the light source and irradiates the light on the **minute opening** 1. Then, by means of detecting the **reflected** light from the light condensing mark 501 provided on the circumference of the **minute opening** 1, the relative position between the light condensing point condensed by the **lens** and the light condensing mark 501 is detected so that the light condensing point is controlled to follow the light condensing mark 501. Thus, intensive and constant **near**

four-piece photo detector 103. Consequently, the information **recorded** with high-density can be reproduced even by small number of the components.

An outline...light condensing point is controlled to follow the light condensing mark by means of the **lens** movement by the **lens** actuator or by means of the beam **deflecting** means so that the light of high energy density is irradiated on the light condensing mark at all times . Therefore, intensive and constant **near - field light** can be generated in the **minute opening** at all times so that rapid **recording** and/or reproducing of the information can be realized using the **near - field optical** head. In addition, as the light condensing point is controlled to follow the light condensing...

...similar function can be realized even though the manufacture or the assembly accuracy of the **near - field optical** head may be comparatively low. Therefore, cheap **near - field optical** head can be provided.

Further, according to the near-field optical head related to the...

23/3,K/2 (Item 2 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

01335236

Process of producing near-field light generating element

Verfahren zur Herstellung lichterzeugender Nahfeld-Elemente

Procede de production d'elements generateurs de lumiere en champ proche

PATENT ASSIGNEE:

Seiko Instruments Inc., (839495), 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP), (Applicant designated States: all)

INVENTOR:

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Mitsuoka, Yasuyuki, c/o Seiko Instruments R&D Cent, 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)

Maeda, Hidetaka, c/o Seiko Instruments R&D Center, 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)

Kato, Kenji, c/o Seiko Instruments R&D Center Inc., 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)

Niwa, Takashi, c/o Seiko Instruments R&D Center, 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, (JP)

LEGAL REPRESENTATIVE:

Sturt, Clifford Mark et al (50502), Miller Sturt Kenyon 9 John Street, London WC1N 2ES, (GB)

PATENT (CC, No, Kind, Date): EP 1139121 A2 011004 (Basic)
EP 1139121 A3 031210

APPLICATION (CC, No, Date): EP 2001301662 010223;

PRIORITY (CC, No, Date): JP 200062407 000307

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G02B-003/00; G12B-021/02; G12B-021/06; G11B-007/22

ABSTRACT WORD COUNT: 118

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200140	463
SPEC A	(English)	200140	12265
Total word count - document A			12728
Total word count - document B			0
Total word count - documents A + B			12728

...SPECIFICATION be omitted.
After being thus prepared, the two substrates are fixed so that the plane **micro lens** 303 is sandwiched there between as shown in FIG.3. As a result, luminous flux fed to the **optical waveguide** on the **optical waveguide** substrate 301 is diffused from the outgoing end of the **optical waveguide** and **reflected** on the incline on the **optical waveguide** substrate 301. After that, the luminous flux condensed at the micro-aperture by transmitting through the plane **micro lens** 303. Thus, **near - field light** is formed adjacent to the micro-aperture. When a storage medium or a sample is...

...by virtue of interaction among the micro-aperture the storage medium and the Sample, the **near - field light** is converted into propagation light. By receiving the propagation light with a light-receiving element ...

...medium, or to observe optical characteristic of the surface of the sample. Further, as for **recording** onto a storage medium, it is provided by positioning a storage medium and the micro-aperture close to each other, move the **near - field light** generating element that has the micro-aperture at a desired position on the storage medium, and by irradiating the **near - field light** from the micro-aperture onto the storage medium to **record** information.
The embodiment of the invention described hereinbefore is for a case where the convex...

23/3,K/3 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00989247 **Image available**
OPTICAL TRANSMISSION APPARATUS WITH DIRECTIONALITY AND DIVERGENCE CONTROL
APPAREIL DE TRANSMISSION OPTIQUE AVEC COMMANDE DE LA DIRECTIVITE ET DE LA DIVERGENCE
Patent Applicant/Assignee:
UNIVERSITE LOUIS PASTEUR, 4, rue Blaise-Pascal, F-67000 Strasbourg, FR, FR (Residence), FR (Nationality), (For all designated states except: US)
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE, Etablissement Public a Caractere, Scientifique et Technologique, 3, Rue Michel Ange, F-75016 Paris, FR, FR (Residence), FR (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
LEZEC Henri Joseph, 15 Rue Wimpheling, F-67000 Strasbourg, FR, FR (Residence), FR (Nationality), (Designated only for: US)
EBBESEN Thomas Wren, 2 Quai Turckheim, F-67000 Strasbourg, FR, FR (Residence), FR (Nationality), (Designated only for: US)
Legal Representative:
CABINET NUSS (agent), 10 Rue Jacques Kable, F-67080 Strasbourg Cedex, FR,

Patent and Priority Information (Country, Number, Date):
Patent: WO 200319245 A2-A3 20030306 (WO 0319245)
Application: WO 2002EP11047 20020830 (PCT/WO EP0211047)
Priority Application: US 2001316247 20010831
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 14085

Fulltext Availability:
Claims

Claim
... described above, is preferably mounted to a support 72, such as a substrate or an **optical fiber** . Dashed line N represents a line normal to the surface of optical filter 70, and...different light collecting devices 82. The light collectiving devices can be (but limited to being) **optical fibers** , lenses, mirrors and light detectors. The period P,, of surface features 40' of the first...exit of a small aperture is made efficient.
Another application for the invention is in **near - field scanning** optical microscopy ("NSOM"). Fig. 15 shows an embodiment of the **near - field scanning** optical microscope probe of the present invention, in which the probe acts as a light...small optical divergence provided by the surface topography on the second surface (output surface) which **focuses** the transmitted **light** on the specimen.
Another application for the invention is in bright subwavelength light sources. Fig...the end of a waveguide I I I such as (but not limited to) an **optical fiber** . The light couples with the periodic array of surface features 40' on the first surface...data which is extremely difficult if not impossible to achieve by conventional optics consisting of **lenses** . If a subwavelength aperture is used to limit the size of the optical beam it...as the read/write head moves across the optical storage media.
This would require complex **lenses** and alignment devices to achieve and therefore is not considered a practical solution to the...light collecting devices 203. The light collectiving devices can be (but not limited to being) **optical fibers** , **lenses** , **mirrors** and light detectors. For illustrative purposes only two collecting devices are shown in

23/3,K/4 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00785032 **Image available**
RADAR APPARATUS FOR IMAGING AND/OR SPECTROMETRIC ANALYSIS AND METHODS OF PERFORMING IMAGING AND/OR SPECTROMETRIC ANALYSIS OF A SUBSTANCE FOR DIMENSIONAL MEASUREMENT, IDENTIFICATION AND PRECISION RADAR MAPPING
RADAR D'IMAGERIE ET/OU D'ANALYSE SPECTROMETRIQUE, PROCEDES D'EXECUTION D'IMAGERIE ET/OU D'ANALYSE SPECTROMETRIQUE D'UNE SUBSTANCE, AUX FINS DE MESURE, IDENTIFICATION ET CARTOGRAPHIE RADAR DE PRECISION

Patent Applicant/Inventor:
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Legal Representative:
MURGITROYD & COMPANY (agent), 373 Scotland Street, Glasgow G5 8QA, GB,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200118533 A1 20010315 (WO 0118533)
Application: WO 2000GB3431 20000907 (PCT/WO GB0003431)
Priority Application: GB 9921042 19990907
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 15805

Fulltext Availability:
Claims

Claim
... contact each other in the transillumination configuration. For a required internal chamber volume, the dielectric **lenses** 9a, 9b are selected to optimise the convergence/divergence of radiation emitted by the antenna...

...the selected dielectric material, such as distilled water in this example, to make a dielectrically **clad** bistatic antenna pair. The above configuration enables an optimum impedance match to be obtained at...
...The radiation emitted by the transmitting antenna 8a is focused by means of the wax **lens** 9a so that the sample 10 placed in the lower portion of the chamber 4a is irradiated. Each wax **lens** 9a, 9b in this embodiment extends 4mm into the base of the chamber portions 4a...

...filled with a suitable dielectric, for example, air. The radiation is refocussed by the wax **lens** 9b into the receiving antenna assembly 2 where it is detected by the receiving antenna...

...MHz to 200 MHz. A large enough time window is employed to ensure that sufficient **reflections** have occurred within the telescopes 2, 3 and the chamber 4. For example, a time...angle to one another on one side of the object etc under examination, with a **reflector** placed behind the object so that the signal from the Tx antenna passes through the object and is **reflected** back to the receiver by the **reflector** .
As shown in Fig. 7D, the assemblies are co-axially aligned to face one another...
...either side of the belt to transilluminate baggage as it moves along the belt. Metallic **reflectors** may be further provided below the belt and around the sides/roof of any surrounding...

classified.
1 8
The images may also be suitably scaled by software, with...

...the transmit pulse to allow true conformal mapping of object shapes. For example, conventional GPR **reflections** from circular or elliptical section structures such as pipes occur as parabolic echoes from the top and bottom of the pipe **reflecting** surfaces, whereas mapping in the manner described above will display the structures in their true...Fig. 12) is preferably selected.
Modes A1 to A5 are intended for close range or **near field imaging** and typecasting such as in medical and biological applications. The recommended frequency ranges for these...

...the rate at is which pulses are emitted from the transmitter. For close range (focussed **near field imaging**) medical and biological applications, PRF should be at least 64 kHz for combined imaging and...

23/3,K/5 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00753866 **Image available**
OPTICAL STORAGE SYSTEM WITH HEAD CLEANING MECHANISM
SYSTEME DE MEMOIRE OPTIQUE AVEC MECANISME DE NETTOYAGE DE TETE
Patent Applicant/Assignee:
TERASTOR CORPORATION, 2310 North First Street, San Jose, CA 95131-1011, US, US (Residence), US (Nationality)
Inventor(s):
NOVOTNY Vlad, 16105 Cerro Vista Drive, Los Gatos, CA 95032, US
HAJJAR Roger, 1877 Scott Boulevard #102, Santa Clara, CA 95050, US
Legal Representative:
HARRIS Scott C, Fish & Richardson P.C., Suite 500, 4350 La Jolla Village Drive, San Diego, CA 92122, US
Patent and Priority Information (Country, Number, Date):
Patent: WO 200067252 A1 20001109 (WO 0067252)
Application: WO 2000US12509 20000504 (PCT/WO US0012509)
Priority Application: US 99304527 19990504
Designated States: JP
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Filing Language: English
Fulltext Word Count: 10969
Fulltext Availability:
Detailed Description

Detailed Description
... storage systems with other types of near-field optical elements rather than a near-field **lens** with a flat interfacing surface. For example, the optical head may use a solid immersion **mirror** , a tapered **optical fiber** near-field **recording** head, or a

high-index slider with a diffractive optical element (e.g., a diffractive **lens**) on a high-index transparent slider.

See, Lee et al., "'Feasibility study on near field...

23/3,K/6 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00548297 **Image available**
HEATED HEAD FOR DATA STORAGE SYSTEMS
TETE CHAUFFEE POUR SYSTEME DE STOCKAGE DE DONNEES
Patent Applicant/Assignee:
TERASTOR CORPORATION,
NOVOTNY Vlad,
DIEPERSLOOT David,
HAJJAR Roger,
BELL Bernard W Jr,
Inventor(s):
NOVOTNY Vlad,
DIEPERSLOOT David,
HAJJAR Roger,
BELL Bernard W Jr,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200011670 A1 20000302 (WO 0011670)
Application: WO 99US19198 19990820 (PCT/WO US9919198)
Priority Application: US 9897548 19980821; US 99227778 19990108
Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US US UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 11803

Fulltext Availability:
Detailed Description

Detailed Description
... types of near-field lenses or other near-field optical elements, including, a near-field **lens** formed of a radially graded index rod, a solid immersion **mirror** , a tapered **optical fiber** near 25 field **recording** head, or a high-index slider with a diffractive optical element (e.g., a diffractive **lens**) on a high-index transparent slider. See, Lee et al., "Feasibility study on **near field optical** memory using a catadioptric optical system," Optical Data Storage, 1998 30 Technical Digest Series, Vol...
?